



EASTERN RESEARCH GROUP, INC.

MEMORANDUM

TO: Jim Eddinger, U.S. Environmental Protection Agency, OAQPS (C439-01)

FROM: Roy Oommen, Eastern Research Group (ERG), Morrisville

DATE: October 2002

SUBJECT: Methodology for Estimating Cost and Emissions Impacts for Industrial, Commercial, Institutional Boilers and Process Heaters National Emission Standards for Hazardous Air Pollutants

1.0 INTRODUCTION

The purpose of this memorandum is to discuss the methodology used to estimate national cost and emission impacts of the industrial, commercial, and institutional boiler and process heater NESHAP. The results of the cost and emission impacts analysis are also presented for the maximum achievable control technology (MACT) floor level of control and options more stringent than the floor. Control options more stringent than the MACT floor were chosen based on control technologies that could achieve greater emissions reductions than those at the floor. The algorithms and inputs used to calculate cost and emission impacts, and the development of the MACT floor level of control are presented in other memoranda. Section 2.0 discusses the methodology used to estimate cost and emission impacts, and also presents the results of the analyses. Section 3.0 discusses options more stringent than the MACT floor level of control.

2.0 METHODOLOGY FOR ESTIMATING COST AND EMISSION IMPACTS

The cost and emission impacts analyses were conducted on model units that represent the different types of boilers and process heaters in the U.S. Eighty-one general model units were developed based on the size of the unit, fuel burned, and type of combustor. These were further

divided into 283 model units that incorporate information on control technologies. Average emission factors (in lb/MMBtu) were developed for 31 pollutants of interest for each model unit with a specified control technology. Baseline emissions were then calculated by applying the average emission factors to the control level model units. A detailed discussion of the procedures and results of the baseline emissions analysis is presented in another memorandum.¹

For the impacts analysis, emission reductions and costs were calculated for controlling baseline emissions to the MACT floor level of control and options more stringent than the floor level of control. The MACT floor analysis resulted in identification of the control technology and emission limits associated with the MACT floor level of control for nine subcategories and four pollutant groups of interest: inorganic HAP, organic HAP, non-mercury metallic HAP, and mercury. No add-on technology or uniform good combustion practice (GCP) was identified that controlled organic HAP compounds. Surrogate compounds were identified for the inorganic HAP (hydrogen chloride) and non-mercury metallic HAP (particulate matter) to represent the large number of compounds included in these categories. A detailed discussion of the procedures and results of the MACT floor analysis is presented in another memorandum.²

The MACT floor emission limits for each of the pollutant groups were then assigned to the control level model units based on whether the model unit used a control technology that achieved equivalent or better reduction of each pollutant group. Appendix A-1 summarizes the MACT floor limits used in this analysis. Changes to the MACT floor emission limits were made after the impacts analysis was completed, and are documented in the MACT floor memorandum.² The changes result in higher emission limits resulting in decreased capital and annual costs. Therefore, the impacts results presented in this memorandum provide a more conservative estimate of costs.

If a model unit had the MACT floor control technology, it was assumed that the model met the MACT floor emission limit. For existing sources, If the MACT floor emission limit exceeded the average emission factor assigned to the control level model unit then the model unit was assumed to not require any additional control. If the average emission factor assigned to the control level model unit exceeded the MACT floor emission level then the percent emission reduction necessary to meet the floor limit was calculated. Appendix A-2 summarizes the percent

reduction necessary for each control level model unit to meet the MACT floor emission limits for existing sources. Appendix A-3 summarizes the same for new sources.

Control technologies were then identified that could achieve the required percent reduction. Appendix A-4 presents the control efficiency for the various pollutant groups assigned to each add-on control device. Units with multiple control devices were assigned the highest efficiency from the control devices for the pollutant groups. For example, a unit with a fabric filter, cyclone, and packed scrubber were assigned the control efficiency for PM from the fabric filter and HCl from the packed scrubber. The assigned efficiencies were based on engineering judgement and previous EPA studies.³⁻⁹ The technology with the least cost on an annualized basis was then chosen. Algorithms and inputs used to calculate capital and annual costs for each control device are discussed in another memorandum.¹⁰ Emission impacts were calculated by applying the percent reduction required to meet the MACT floor to the baseline emission level.

For new sources, the NSPS for industrial boilers was reviewed to identify the expected baseline level of control. Based on review of the NSPS, it was determined for this impacts analysis that at baseline, large and limited use units burning coal would require control equivalent to a fabric filter and packed scrubber, large and limited use units burning biomass would only require control equivalent to a fabric filter, and large and limited use units burning residual oil would require control equivalent to a packed scrubber. The remaining boilers and process heaters are not required to have any control at baseline for new sources. For units that require additional control to meet the new source MACT floor requirements, the cost of the control was calculated assuming that the MACT floor control technology would be applied. The MACT floor emission reduction was calculated by applying the emission control efficiency of the floor control technology.

For each model unit the costs for controlling all the pollutant groups was summed to determine the total model unit cost. For example, if the model unit required an ESP for PM/metals control and a wet scrubber for HCl control, the total model unit cost would be the sum of the cost of both controls. The cumulative cost of the controls required for each model was calculated by multiplying the total summed control costs and the total number of units assigned to each model. Some control technologies achieve control of several pollutants. For these controls, the costs of controlling the applicable pollutants were compared to the cumulative costs of other

technologies, and the least cost technology or combination of technologies was chosen. Appendix A-5 summarizes the least cost controls for existing sources. The least cost option is identified in bold. Appendix A-6 summarizes the control costs for model units to meet the new source MACT floor requirements. Once the cost of control was determined, testing and monitoring costs were calculated for the control based on information presented in the cost algorithms memorandum.¹⁰ Appendix A-7a and A-7b present the monitoring and testing total capital investment costs and annualized costs, respectively, for existing sources. Appendix A-8a and A-8b present the costs for new sources. Appendix A-9 and A-10 provide MACT floor emission reductions for selected compounds for each model..

For new sources subject to CO monitoring and emission limits, costs were estimated using information in the cost algorithms memorandum. However, emission reductions could not be calculated because the CO limits could not be correlated to organic HAP reduction levels.

3.0 OPTIONS MORE STRINGENT THAN THE MACT FLOOR

Options more stringent than the MACT floor level of control were chosen to reflect technologies that achieve greater reduction than the floor control for either the entire subcategory or a subset of the subcategory (e.g., solids divided into coal and non-fossil units, and liquids divided into residual and distillate units). Table 3-1 summarizes the above-the-floor options that were identified for existing and new sources. The rationale for choosing the above the floor options is explained below.

Existing Solid Units. For large existing solid units a better designed and operated fabric filter (the MACT floor for new units) was identified as a control technology that could achieve greater emissions reductions of metallic HAP and PM emissions than the MACT floor level of control. Consequently, the emissions reductions and additional cost of adopting an emission limit representative of the performance of a unit with a better designed and operated fabric filter was analyzed. Packed bed scrubbers were identified as a control technology that could achieve greater emissions reductions of inorganic HAP, like HCl, than the MACT floor level of control (wet scrubber). Consequently, the emissions reductions and additional cost of adopting an emission limit representative of the performance of a unit with a packed bed scrubber was analyzed. No

control techniques were identified that would achieve greater emission reductions of mercury than the MACT floor level of control (fabric filter).

For existing small units the above-the-floor option of a fabric filter was identified, generally, as the most effective control device for non-mercury metallic HAP and mercury. To control inorganic HAP such as HCl, the above-the-floor option of a wet scrubber was identified as the least cost option that would reduce emissions.

For existing limited use units the MACT floor level of control was identified as an ESP. Although fabric filters were identified as being more effective, many ESP can achieve similar levels. Any additional emission reductions from using a fabric filter would be minimal and costly considering retrofit costs for existing units that already have ESP. Therefore, an above-the-floor option for metallic HAP was not analyzed in detail. However, an above-the-floor option based on the level of performance of a fabric filter was analyzed for mercury control. The MACT floor for inorganic HAP in this subcategory was no emission reductions. For above-the-floor control of inorganic HAP, the level of performance generally achievable by a wet scrubber was analyzed since it was identified as the least cost option.

Existing Liquid Units. The MACT floor for each liquid fuel subcategory is no emission reductions. For above-the-floor options for the liquid subcategory, several PM controls (e.g., fabric filters, ESP, and venturi scrubbers) were identified that would reduce non-mercury metallic HAP emissions. For the above-the-floor analysis, the cost and emission reduction of applying a high efficiency PM control device, such as a fabric filter was analyzed, since these would be more likely to be installed. Wet scrubbers were identified as an above-the-floor option for reduction of inorganic HAP, such as HCl and fabric filters were identified as an above-the-floor technology option for reduction of mercury. Consequently, the emissions reductions and additional cost of applying high efficiency PM controls and wet scrubbers on liquid fuel-fired units were analyzed.

Existing Gas Units. The MACT floor for each gaseous fuel subcategory is no emission reductions. However, the great majority of the emissions from gas-fired units are organic HAPs. CO monitoring and emission limits were considered as an above-the-floor option, but were not selected as MACT given the costs and uncertain HAP reductions achieved. Therefore, no above-the-floor control technique was analyzed for organic HAP, and MACT is no emission reduction of non-mercury metallic HAP, mercury, inorganic HAP, and organic HAP.

New Units. The MACT floor level of control for new units is based on the emission control that is achieved in practice by the best controlled similar source within each of the subcategories. No technologies were identified that would achieve non-mercury metals reduction greater than the new source floors for the liquid and solid subcategories or CO monitoring for the solid, liquid, and gaseous subcategories. For inorganic HAP control, packed bed scrubbers achieve higher emissions reductions than MACT floors consisting of a wet scrubber. Packed bed scrubbers are the technology basis of the MACT floor for the large unit subcategory, but wet scrubbers were the technology basis of the floors for the small unit and limited unit subcategories. Therefore, the cost and emission reduction benefits of applying a packed bed scrubber as a beyond-the-floor option for new solid and liquid units within the small and limited use subcategories were examined. In reviewing potential regulatory options beyond the new source MACT floor level of control, one existing solid fuel-fired industrial boiler was identified that was using carbon injection technology for mercury control. However, emissions data obtained from this unit indicated that it was not achieving mercury emission reduction from the uncontrolled levels. Moreover, information is not available to otherwise show that carbon injection is effective for reducing mercury emissions from industrial, commercial, and institutional boilers and process heaters. Information in the emissions database or from other source categories does not show that other control technologies, such as fabric filters, ESP, or wet scrubbers, achieve reductions in mercury emissions from liquid fuel-fired industrial, commercial, and institutional boilers and process heaters. Therefore, carbon injection, for solid fuel units, and other control techniques, for liquid fuel units, were not evaluated as regulatory options.

Tables 3-2 and 3-3 summarize the cost and emission reductions of the MACT floor and above the floor options for existing and new sources, respectively.

4.0 REFERENCES

1. Christy Burlew, ERG. Memorandum to Jim Eddinger, U.S. Environmental Protection Agency, OAQPS. Development of Average Emission Factors and Baseline Emission Estimates for the Industrial, Commercial, and Institutional Boilers and Process Heaters National Emission Standards for Hazardous Air Pollutants. October, 2002.
2. Roy Oommen, ERG. Memorandum to Jim Eddinger, U.S. Environmental Protection Agency, OAQPS. MACT Floor Analysis for the Industrial, Commercial, and Institutional Boilers and Process Heaters National Emission Standards for Hazardous Air Pollutants. October, 2002.
3. U.S. Environmental Protection Agency. Compilation of Air Pollution Emission Factors (AP-42), Fifth Edition, Volume 1: Stationary and Point Sources, Chapter 1: External Combustion Sources. January, 1996.
4. U.S. Environmental Protection Agency. Municipal Waste Combustors: Background Information for Proposed Standards: Post Combustion Technology Performance. EPA 450/3-89-27c. August, 1989.
5. EPA TTN website for Electric Utility Steam Generating Units, Section 112 Rulemaking: “<http://www.epa.gov/ttn/atw/combust/utltox/utoxpg.html>”.
6. U.S. Environmental Protection Agency. Office of Air Quality Planning and Standards. OAQPS Control Cost Manual, Fifth Edition, Research Triangle Park. EPA 453/B-96-001. February, 1996.
7. U.S. Environmental Protection Agency. Control Technologies for Hazardous Air Pollutants, Research Triangle Park, NC. EPA 625/6-91/014. June 1991.
8. U.S. Environmental Protection Agency. Background Information for New Source Performance Standards: Nonfossil Fuel Fired Industrial Boilers. Draft EIS. EPA 450/3-82-007. 1982
9. Christy Burlew and Roy Oommen, Eastern Research Group (ERG). Memorandum to Jim Eddinger, U.S. Environmental Protection Agency, OAQPS. Development of Average Emission Factors and Baseline Emission Estimates for the Industrial, Commercial, and Institutional Boilers and Process Heaters National Emission Standard for Hazardous Air Pollutants. October 2002
10. Roy Oommen, ERG. Memorandum to Jim Eddinger, U.S. Environmental Protection Agency, OAQPS. Methodology for Estimating Control Costs for the Industrial, Commercial, and Institutional Boilers and Process Heaters National Emission Standards for Hazardous Air Pollutants. October, 2002.

Table 3-1. Summary of Above-the-floor Control Technology Options for Existing and New Sources

Subcategory	Division	Option	Description of Option for Existing Sources	Description of Option for New Sources
Solid	<10 MMBtu/hr	Coal	Floor	No emission control
			Option 1a	Fabric Filter
			Option 1b	Wet Scrubber
		Non-fossil	Floor	No emission control
			Option 1a	Fabric Filter
			Option 1b	Wet Scrubber
	>10 MMBtu/hr	Coal	Floor	Emission limits based on fabric filter and wet scrubber
			Option 1a	Better designed Fabric Filter
			Option 1b	Packed Scrubber
		Non-fossil	Floor	Emission limits based on fabric filter and wet scrubber
			Option 1a	Better designed Fabric Filter
			Option 1b	Packed Scrubber
	<10 % capacity	Coal	Floor	PM Emission limit based on ESP and fabric filter
			Option 1a	Fabric Filter
			Option 1b	Wet Scrubber
		Non-fossil	Floor	PM Emission limit based on ESP
			Option 1a	Fabric Filter
			Option 1b	Wet Scrubber
Liquid	<10 MMBtu/hr	Residual	Floor	No emission control
			Option 1a	Fabric Filter
			Option 1b	Wet Scrubber
		Distillate	Floor	No emission control
			Option 1	None
	>10 MMBtu/hr	Residual	Floor	No emission control
			Option 1a	Fabric Filter
			Option 1b	Wet Scrubber
		Distillate	Floor	No emission control
			Option 1	None
	<10 % capacity	Residual	Floor	No emission control
			Option 1a	Fabric Filter
			Option 1b	Wet Scrubber
		Distillate	Floor	No emission control
			Option 1	None
Gas		Floor	No emission control	CO limit
		Option 1	CO Monitoring and Limits	None

Table 3-2. Emission and Cost Impacts of MACT Floor and Above-the-Floor Options for Existing Sources

Subcategory		Divisions	Option	Description	Cost Information		Baseline Emissions and Control Option Emissions Reductions (Mg/yr)								
					TCI (10 ⁶ \$)	TAC (10 ⁶ \$/yr)	Hg	Pb	HCl	PM	Total non-mercury metals ¹	Total selected inorganics ²	Total selected organics ³	Total selected HAPs ⁴	
Solid	<10 MMBtu/hr	Coal	Baseline Emissions		----	----	4.4E-03	0.24	44.6	1,321	1.8	68.2	1.3	67.2	
			Floor	No emission control	0	0	0	0	0		0	0	0	0	
			Option 1a	Fabric Filter	10	10	3.3E-03	0.21	0		1.7	0	0	0.19	
			Option 1b	Wet Scrubber	13	11	2.2E-03	0	44.2		0	66.9	0	65.1	
		Non-fossil	Baseline Emissions		----	----	5.5E-03	0.44	40.7	2,317	12.0	42.2	86.6	127	
			Floor	No emission control	0	0	0	0	0	0	0	0	0	0	
			Option 1a	Fabric Filter	23	22	4.1E-03	0.39	0	2,293	10.8	0	0	0.11	
			Option 1b	Wet Scrubber	32	24	2.8E-03	0	40.3	0	0	41.7	0	41.2	
		Total	Baseline Emissions		----	----	0.01	0.67	85.3	3,638	13.9	110	87.9	194	
			Floor	No emission control	0	0	0	0	0	0	0	0	0	0	
			Option 1a	Fabric Filter	34	31	7.4E-03	0.60	0	3,600	12.4	0	0	0.29	
			Option 1b	Wet Scrubber	45	35	5.0E-03	0	84.4	0	0	109	0	106	
	>10 MMBtu/hr	Coal	Baseline Emissions		----	----	4.5	99.2	52,723	376,868	776	77,696	1,947	77,040	
			Floor	Emission limits based on fabric filter and wet scrubber	1,218	669	1.5	68.6	37,036	326,448	535	53,363	0	51,920	
			Option 1a	Better designed Fabric Filter	2,402	1,114	3.0	80.2	36,733	365,103	627	52,833	0	51,441	
			Option 1b	Packed Scrubber	2,805	1,544	2.2	68.6	52,189	326,448	535	76,270	0	74,385	
		Non-fossil	Baseline Emissions		----	----	1.2	45.1	4,872	249,713	765	5,036	6,106	10,837	
			Floor	Emission limits based on fabric filter and wet scrubber	387	145	0.2	25.9	1,235	184,248	449	1,261	0	1,263	
			Option 1a	Better designed Fabric Filter	610	268	0.9	40.4	0	247,066	686	0	0	27.5	
			Option 1b	Packed Scrubber	1,504	761	0.61	25.9	4,823	184,248	449	4,961	0	4,902	
		Total	Baseline Emissions		----	----	5.7	144	57,595	626,581	1,541	82,732	8,053	87,877	
			Floor	Emission limits based on fabric filter and wet scrubber	1,605	814	1.7	94.5	38,271	510,697	985	54,624	0	53,183	
			Option 1a	Better designed Fabric Filter	3,013	1,382	3.9	121	36,733	612,170	1,313	52,833	0	51,468	
			Option 1b	Packed Scrubber	4,308	2,305	2.8	94.5	57,012	510,697	985	81,231	0	79,286	
		<10 % capacity	Coal	Baseline Emissions		----	----	0.05	1.27	511	3,399	9.8	752	3.9	733
				Floor	PM Emission limit based on ESP and fabric filter	91	20	2.0E-03	0.74	0	2,372	5.7	0	0	0.6
				Option 1a	Fabric Filter	97	41	0.04	1.13	0	3,353	8.7	0	0	1.0
				Option 1b	Wet Scrubber	278	111	0.03	0.74	506	2,372	5.7	739	0	723
			Non-fossil	Baseline Emissions		----	----	2.4E-03	0.07	13.2	334	1.6	13	12.3	25.1
				Floor	PM Emission limit based on ESP and fabric filter	13	3	0	0.04	0	204	0.9	0	0	0
	Option 1a			Fabric Filter	11	7	1.8E-03	0.06	0	331	1.4	0	0	0	
	Option 1b			Wet Scrubber	33	13	1.2E-03	0.04	13	204	0.9	13.3	0	13.2	
	Total		Baseline Emissions		----	----	0.05	1.34	524	3,733	11.4	765	16.2	759	
			Floor	PM Emission limit based on ESP and fabric filter	105	23	2.0E-03	0.77	0	2,576	6.6	0	0	0.7	
			Option 1a	Fabric Filter	109	48	0.04	1.19	0	3,684	10.1	0	0	1.0	
			Option 1b	Wet Scrubber	310	124	0.03	0.77	519	2,576	6.6	752	0	736	

Table 3-2. Emission and Cost Impacts of MACT Floor and Above-the-Floor Options for Existing Sources

Subcategory	Divisions	Option	Description	Cost Information		Baseline Emissions and Control Option Emissions Reductions (Mg/yr)							
				TCI (10 ⁶ \$)	TAC (10 ⁶ \$/yr)	Hg	Pb	HCl	PM	Total non-mercury metals ¹	Total selected inorganics ²	Total selected organics ³	Total selected HAPs ⁴
Liquid	<10 MMBtu/hr	Residual	Baseline Emissions	----	----	0.03	0.06	0.27	1,014	13.1	9.1	5.0	20.8
			Floor	0	0	0	0	0	0	0	0	0	0
			Option 1a	48	51	0.02	0.05	0	1,003	11.7	0	0	6.9
			Option 1b	55	52	0.02	0	0.27	0	0	9	0	8.3
		Distillate	Baseline Emissions	----	----	1.3E-04	0.03	1.0	245	0	35.2	4.3	35.5
			Floor	0	0	0	0	0	0	0	0	0	0
		Total	Baseline Emissions	----	----	0.03	0.09	1.3	1,259	13.2	44.3	9.3	56.3
			Floor	0	0	0	0	0	0	0	0	0	0
			Option 1a	48	51	0.02	0.05	0	1,003	11.7	0	0	6.9
			Option 1b	55	52	0.02	0	0.27	0	0	9	0	8
	>10 MMBtu/hr	Residual	Baseline Emissions	----	----	4.1	7.3	32.8	114,736	1,570	1,110	621	2,525
			Floor	0	0	0	0	0	0	0	0	0	0
			Option 1a	582	339	3.0	6.6	0	113,579	1,412	0	0	828
			Option 1b	839	352	1.8	0	29.1	0	0	973	0	910
		Distillate	Baseline Emissions	----	----	1.6E-03	0.40	13.0	3,071	1.7	441	53.5	445
			Floor	0	0	0	0	0	0	0	0	0	0
		Total	Baseline Emissions	----	----	4.1	7.7	45.8	117,807	1,572	1,551	675	2,970
			Floor	0	0	0	0	0	0	0	0	0	0
			Option 1a	582	339	3.0	6.6	0	113,579	1,412	0	0	828
			Option 1b	839	352	1.8	0	29.1	0	0	973	0	910
	<10 % capacity	Residual	Baseline Emissions	----	----	0.09	0.17	0.73	2,821	36.3	24.9	13.8	57.1
			Floor	0	0	0	0	0	0	0	0	0	0
			Option 1a	100	72	0.07	0.15	0	2,793	32.7	0	0	19.1
			Option 1b	164	76	0.04	0	0.70	0	0	23.4	0	22.0
		Distillate	Baseline Emissions	----	----	6.5E-05	0.02	0.52	119	0	17.7	2.1	17.8
			Floor	0	0	0	0	0	0	0	0	0	0
		Total	Baseline Emissions	----	----	0.09	0.18	1.3	2,941	36.4	42.5	15.9	74.9
			Floor	0	0	0	0	0	0	0	0	0	0
			Option 1a	100	72	0.07	0.15	0	2,793	32.7	0	0	19.1
			Option 1b	164	76	0.04	0	0.70	0	0	23.4	0	22.0
Gas		Total	Baseline Emissions	----	----	0	7.1	36.3	10,062	114	42.3	2,069	1,643
			Floor	0	0	0	0	0	0	0	0	0	0

Table 3-2. Emission and Cost Impacts of MACT Floor and Above-the-Floor Options for Existing Sources

Subcategory		Divisions	Option	Description	Cost Information		Baseline Emissions and Control Option Emissions Reductions (Mg/yr)								
					TCI (10 ⁶ \$)	TAC (10 ⁶ \$/yr)	Hg	Pb	HCl	PM	Total non-mercury metals ¹	Total selected inorganics ²	Total selected organics ³	Total selected HAPs ⁴	
Total	<10 MMBtu/hr	Baseline Emissions			----	----	0.04	1.2	89.0	5,565	34.5	158	232	357	
		Floor			0	0	0	0	0	0	0	0	0	0	
		Option 1a			82	83	0.03	0.7	0	4603.676	24.2	0	0	7.2	
		Option 1b			101	87	0.02	0	84.7	0	0	117.43056	0	115	
	>10 MMBtu/hr	Baseline Emissions			----	----	9.8	158.5075	57,674	753,693	3,218	84,322	10,644	92,368	
		Floor			1,605	814	1.7	94.5	38,271	510,697	985	54,624	0	53,183	
		Option 1a			3,595	1,722	6.9	127.1205	36,733	725,748	2,725	52,833	0	52,296	
		Option 1b			5,148	2,657	4.6	94.5	57,041	510,697	985	82,204	0	80,197	
	<10 % capacity	Baseline Emissions			----	----	0.14	1.6	525	6,763	48.7	808	50.3	848	
		Floor			105	23	2.0E-03	0.77	0	2,576	6.6	0	0	0.65	
		Option 1a			209	120	0.11	1.3	0	6,477	42.8	0	0	20.2	
		Option 1b			474	200	0.07	0.77	519	2,576	6.6	775	0	758	
	Total		Baseline Emissions			----	----	9.9	161	58,289	766,022	3,301	85,288	10,927	93,574
			Floor			1,710	837	1.7	95.2	38,271	513,273	991	54,624	0	53,184
			Option 1a			3,885	1,924	7.1	129	36,733	736,829	2,792	52,833	0	52,323
			Option 1b			5,723	2,945	4.7	95.2	57,645	513,273	991	83,097	0	81,069

1 Total non-mercury metals include: arsenic, beryllium, cadmium, chromium, lead, manganese, and nickel

2 Total selected inorganics include: chlorine, hydrochloric acid, hydrofluoric acid, and phosphorus

3 Total selected organics include: 16-PAH, acetaldehyde, acrolein, benzene, dioxin/furans, formaldehyde, methylene chloride, MEK, toluene, and xylenes

4 Total selected HAPs include: acetaldehyde, acrolein, benzene, chlorine, formaldehyde, hydrochloric acid, hydrofluoric acid, MEK, nickel, and xylenes

Table 3-3. Emission and Cost Impacts of MACT Floor and Above-the-Floor Options for New Sources

Subcategory		Divisions	Option	Description	Cost Information		Baseline Emissions and Control Option Emissions Reductions (Mg/yr)							
					TCI (10 ⁶ \$)	TAC (10 ⁶ \$/yr)	Hg	Pb	HCl	PM	Total non-mercury metals ¹	Total selected inorganics ²	Total selected organics ³	Total selected HAPs ⁴
Solid	<10 MMBtu/hr	Coal	Baseline Emissions		----	----	2.4E-04	1.4E-02	2.35	112	0.11	3.7	0.16	3.7
			Floor	Emission limits based on fabric filter and wet scrubber	1.0	1.0	1.8E-04	1.4E-02	2.18	110	0.11	3.3	0	3.3
			Floor + Option 1a	Packed Scrubber	1.1	1.1	1.8E-04	1.4E-02	2.33	110	0.11	3.6	0	3.5
		Non-fossil	Baseline Emissions		----	----	4.5E-04	4.0E-02	3.33	296	1.1	3.5	7.7	10.9
			Floor	Emission limits based on fabric filter and wet scrubber	2.0	1.9	3.4E-04	4.0E-02	0.00	293	1.1	0.04	0	0.03
			Floor + Option 1a	Packed Scrubber	3.9	3.6	3.4E-04	4.0E-02	3.29	293	1.1	3.4	0	3.4
		Total	Baseline Emissions		----	----	6.9E-04	5.4E-02	5.68	407	1.3	7.2	7.8	14.7
			Floor	Emission limits based on fabric filter and wet scrubber	3.0	2.9	5.2E-04	5.4E-02	2.18	403	1.2	3.4	0	3.3
			Floor + Option 1a	Packed Scrubber	5.0	4.7	5.2E-04	5.4E-02	5.62	403	1.2	7.1	0	6.9
	>10 MMBtu/hr	Coal	Baseline Emissions		----	----	0.29	0.17	28.7	1,304	1.3	86	113	152
			Floor	Emission limits based on fabric filter and packed scrubber, and CO monitoring	10.7	5.7	0	0	0	0	0	0	0	0
			Floor + Option 1a	No additional control	10.7	5.7	0	0	0	0	0	0	0	0
		Non-fossil	Baseline Emissions		----	----	0.13	6.8E-02	557	470	1.2	575	532	1,074
			Floor	Emission limits based on fabric filter and packed scrubber, and CO monitoring	9.8	4.0	5.3E-03	1.5E-03	62.8	27.5	6.5E-03	63	0	63
			Floor + Option 1a	Packed Scrubber	99.7	47.7	5.3E-03	1.5E-03	552	27.5	6.5E-03	567	0	558
		Total	Baseline Emissions		----	----	0.42	0.23	586	1,774	2.5	662	644	1,226
			Floor	Emission limits based on fabric filter and packed scrubber, and CO monitoring	20.5	9.7	5.3E-03	1.5E-03	62.8	27.5	6.5E-03	63	0	63
			Floor + Option 1a	Packed Scrubber	110	53.4	5.3E-03	1.5E-03	552	27.5	6.5E-03	567	0	558
	<10 % capacity	Coal	Baseline Emissions		----	----	2.8E-03	2.4E-03	0.44	18.3	1.9E-02	0.96	0.14	0.75
			Floor	Emission limits based on fabric filter, wet scrubber, and CO monitoring	1.1	0.7	1.2E-05	8.9E-04	0.16	6.8	6.9E-03	0.24	0	0.24
			Floor + Option 1a	Packed Scrubber	1.1	0.7	1.2E-05	8.9E-04	0.16	6.8	6.9E-03	0.24	0	0.24
		Non-fossil	Baseline Emissions		----	----	2.6E-05	4.0E-04	0.22	2.9	1.2E-02	0.23	0.50	0.72
			Floor	Emission limits based on fabric filter, wet scrubber, and CO monitoring	0.2	0.1	2.8E-06	3.8E-04	0.00	2.8	1.1E-02	3.6E-04	0	3.0E-04
			Floor + Option 1a	Packed Scrubber	0.6	0.3	2.8E-06	3.8E-04	0.22	2.8	1.1E-02	0.22	0	0.22
		Total	Baseline Emissions		----	----	2.8E-03	2.8E-03	0.66	21.3	3.1E-02	1.2	0.65	1.5
			Floor	Emission limits based on fabric filter, wet scrubber, and CO monitoring	1.3	0.9	1.5E-05	1.3E-03	0.16	9.5	1.8E-02	0.24	0	0.24
			Floor + Option 1a	Packed Scrubber	1.7	1.1	1.5E-05	1.3E-03	0.38	9.5	1.8E-02	0.47	0	0.46

Table 3-3. Emission and Cost Impacts of MACT Floor and Above-the-Floor Options for New Sources

Subcategory		Divisions	Option	Description	Cost Information		Baseline Emissions and Control Option Emissions Reductions (Mg/yr)							
					TCI (10 ⁶ \$)	TAC (10 ⁶ \$/yr)	Hg	Pb	HCl	PM	Total non-mercury metals ¹	Total selected inorganics ²	Total selected organics ³	Total selected HAPs ⁴
Liquid	<10 MMBtu/hr	Residual	Baseline Emissions	No new units	----	----	0	0	0	0	0	0	0	0
			Floor	Emission limits based on fabric filter, wet scrubber	0	0	0	0	0	0	0	0	0	0
			Floor + Option 1a	Packed Scrubber	0	0	0	0	0	0	0	0	0	0
		Distillate	Baseline Emissions		----	----	1.0E-05	2.5E-03	0.08	19.4	0.01	2.7	0.33	2.7
			Floor	Emission limits based on fabric filter, wet scrubber	0	0	0	0	0	0	0	0	0	0
			Floor + Option 1a	Packed Scrubber	0	0	0	0	0	0	0	0	0	0
		Total	Baseline Emissions		----	----	1.0E-05	2.5E-03	0.08	19.4	0.01	2.7	0.33	2.7
			Floor	Emission limits based on fabric filter, wet scrubber	0	0	0	0	0	0	0	0	0	0
			Floor + Option 1a	Packed Scrubber	0	0	0	0	0	0	0	0	0	0
	>10 MMBtu/hr	Residual	Baseline Emissions	No new units	----	----	0	0	0	0	0	0	0	0
			Floor	Emission limits based on ESP, packed scrubber, and CO monitoring	0	0	0	0	0	0	0	0	0	0
			Floor + Option 1a	No additional control	0	0	0	0	0	0	0	0	0	0
		Distillate	Baseline Emissions		----	----	1.4E-04	0.04	1.1	276	1.5E-01	38.8	4.6	39.1
			Floor	Emission limits based on ESP, packed scrubber, and CO monitoring	3.4	0.7	0	0	0	0	0	0	0	0
			Floor + Option 1a	No additional control	3.4	0.7	0	0	0	0	0	0	0	0
		Total	Baseline Emissions		----	----	1.4E-04	0.04	1.1	276	1.5E-01	38.8	4.6	39.1
			Floor	Emission limits based on ESP, packed scrubber, and CO monitoring	3.4	0.7	0	0	0	0	0	0	0	0
			Floor + Option 1a	No additional control	3.4	0.7	0	0	0	0	0	0	0	0
	<10 % capacity	Residual	Baseline Emissions	No new units	----	----	0	0	0	0	0	0	0	0
			Floor	Emission limits based on fabric filter, wet scrubber, and CO monitoring	0	0	0	0	0	0	0	0	0	0
			Floor + Option 1a	No additional control	0	0	0	0	0	0	0	0	0	0
		Distillate	Baseline Emissions		----	----	4.7E-06	1.2E-03	0.04	9.1	4.9E-03	1.3	0.15	1.3
			Floor	Emission limits based on fabric filter, wet scrubber, and CO monitoring	1.9	0.4	0	0	0	0	0	0	0	0
			Floor + Option 1a	No additional control	1.9	0.4	0	0	0	0	0	0	0	0
		Total	Baseline Emissions		----	----	4.7E-06	1.2E-03	0.04	9.1	4.9E-03	1.3	0.15	1.3
			Floor	Emission limits based on fabric filter, wet scrubber, and CO monitoring	1.9	0.4	0	0	0	0	0	0	0	0
			Floor + Option 1a	No additional control	1.9	0.4	0	0	0	0	0	0	0	0
Gas		Total	Baseline Emissions		----	----	0	0.53	2.7	773	8.6	3.2	153	122
			Floor	CO limit	51.0	11.3	0	0	0	0	0	0	0	0

Table 3-3. Emission and Cost Impacts of MACT Floor and Above-the-Floor Options for New Sources

				Cost Information		Baseline Emissions and Control Option Emissions Reductions (Mg/yr)							
				TCI (10 ⁶ \$)	TAC (10 ⁶ \$/yr)	Hg	Pb	HCl	PM	Total non-mercury metals ¹	Total selected inorganics ²	Total selected organics ³	Total selected HAPs ⁴
Subcategory	Divisions	Option	Description										
Total	<10 MMBtu/hr	Baseline Emissions		----	----	7.0E-04	0.09	5.9	477	1.8	10.1	18.1	25.3
		Floor		3.0	2.9	5.2E-04	0.05	2.2	403	1.2	3.4	0	3.3
		Floor + Option 1a		5.0	4.7	5.2E-04	0.05	5.6	403	1.2	7.1	0	6.9
	>10 MMBtu/hr	Baseline Emissions		----	----	0.42	0.76	590	2,767	10.7	703	791	1,378
		Floor		66.5	20.0	5.3E-03	1.5E-03	62.8	27.5	6.5E-03	62.8	0	62.8
		Floor + Option 1a		156	63.7	5.3E-03	1.5E-03	552	27.5	6.5E-03	567	0	558
	<10 % capacity	Baseline Emissions		----	----	2.8E-03	8.8E-03	0.72	37.3	0.11	2.5	2.2	3.8
		Floor		11.6	3.0	1.5E-05	1.3E-03	0.16	9.5	1.8E-02	0.24	0	0.24
		Floor + Option 1a		12.0	3.2	1.5E-05	1.3E-03	0.38	9.5	1.8E-02	0.47	0	0.46
Total		Baseline Emissions		----	----	0.42	0.87	596	3,281	12.6	716	811	1,407
		Floor		81.2	25.9	5.8E-03	0.06	65.1	440	1.3	66.4	0	66.3
		Floor + Option 1a		173	71.6	5.8E-03	0.06	558	440	1.3	574	0	565

1 Total non-mercury metals include: arsenic, beryllium, cadmium, chromium, lead, manganese, and nickel

2 Total selected inorganics include: chlorine, hydrochloric acid, hydrofluoric acid, and phosphorus

3 Total selected organics include: 16-PAH, acetaldehyde, acrolein, benzene, dioxin/furans, formaldehyde, methylene chloride, MEK, toluene, and xylenes

4 Total selected HAPs include: acetaldehyde, acrolein, benzene, chlorine, formaldehyde, hydrochloric acid, hydrofluoric acid, MEK, nickel, and xylenes.

APPENDIX A

Cost and Emission Impacts

(See Excel Spreadsheet “Impactsmemappa.xls”)

Appendix A-1. Emission Limits Used in Impacts Analyses

Subcategory		Existing Sources			New Sources		
		PM	HCl	Mercury	PM	HCl	Mercury
Solidi	Small	---	---	---	0.026	0.02	0.000003
	Large	0.062	0.048	0.000004	0.026	0.02	0.000003
	Limited Use	0.21	---	---	0.026	0.02	0.000003
Liquid	Small	---	---	---	0.03	0.0009	---
	Large	---	---	---	0.03	0.0005	---
	Limited Use	---	---	---	0.03	0.0009	---
Gas		---	---	---	---	---	---

Appendix A-2. Required Emission Reductions to Achieve MACT Floor Level of Control for Existing Sources

Model No	Material	Combustor Type	Capacity Range (MMBtu/hr)	Avg Capacity (MMBtu/hr)	Baseline Control Level	No of Units	PM		HCI		Hg	
							Meets Floor limit?	% Difference	Meets Floor limit?	% Difference	Meets Floor limit?	% Difference
1a	Coal	Other	0-10	4	No Control	48	NA	NA	NA	NA	NA	NA
1b	Coal	Other	0-10	4	Cyclone	32	NA	NA	NA	NA	NA	NA
1c	Coal	Other	0-10	4	FF	3	NA	NA	NA	NA	NA	NA
2a	Coal	Other	10-100	54	No Control	154	No	97%	No	10%	No	26%
2b	Coal	Other	10-100	54	Cyclone	436	No	89%	No	10%	No	26%
2c	Coal	Other	10-100	54	ESP	123	Yes	NA	No	10%	No	26%
2d	Coal	Other	10-100	54	FF	181	Yes	NA	No	10%	Yes	NA
2e	Coal	Other	10-100	54	FF/DSI	5	Yes	NA	Yes	NA	Yes	NA
2f	Coal	Other	10-100	54	FF/SD	5	Yes	NA	Yes	NA	Yes	NA
2g	Coal	Other	10-100	54	Wet Scrubber	15	No	94%	Yes	NA	Yes	NA
3a	Coal	Other	100-250	166	No Control	46	No	97%	No	10%	No	26%
3b	Coal	Other	100-250	166	Cyclone	166	No	89%	No	10%	No	26%
3c	Coal	Other	100-250	166	ESP	112	Yes	NA	No	10%	No	26%
3d	Coal	Other	100-250	166	ESP/Wet Scrubber	2	Yes	NA	Yes	NA	Yes	NA
3e	Coal	Other	100-250	166	FF	160	Yes	NA	No	10%	Yes	NA
3f	Coal	Other	100-250	166	FF/DSI	4	Yes	NA	Yes	NA	Yes	NA
3g	Coal	Other	100-250	166	FF/Wet Scrubber	4	Yes	NA	Yes	NA	Yes	NA
3h	Coal	Other	100-250	166	Wet Scrubber	15	No	94%	Yes	NA	Yes	NA
4a	Coal	Other	>250	565	No Control	24	No	97%	No	10%	No	26%
4b	Coal	Other	>250	565	Cyclone	14	No	89%	No	10%	No	26%
4c	Coal	Other	>250	565	ESP	40	Yes	NA	No	10%	No	26%
4d	Coal	Other	>250	565	ESP/DSI	2	Yes	NA	Yes	NA	No	26%
4e	Coal	Other	>250	565	ESP/Wet Scrubber	4	Yes	NA	Yes	NA	Yes	NA
4f	Coal	Other	>250	565	FF	56	Yes	NA	No	10%	Yes	NA
4g	Coal	Other	>250	565	FF/DSI	40	Yes	NA	Yes	NA	Yes	NA
4h	Coal	Other	>250	565	FF/FSI	10	Yes	NA	Yes	NA	Yes	NA
4i	Coal	Other	>250	565	FF/SD	6	Yes	NA	Yes	NA	Yes	NA
4j	Coal	Other	>250	565	Wet Scrubber	8	No	94%	Yes	NA	Yes	NA
5a	Coal	Wall-fired/PC	0-10	2	No Control	10	NA	NA	NA	NA	NA	NA
5b	Coal	Wall-fired/PC	0-10	2	Cyclone	2	NA	NA	NA	NA	NA	NA
6a	Coal	Wall-fired/PC	10-100	57	No Control	14	No	97%	No	10%	No	26%
6b	Coal	Wall-fired/PC	10-100	57	Cyclone	5	No	89%	No	10%	No	26%
6c	Coal	Wall-fired/PC	10-100	57	ESP	37	Yes	NA	No	10%	No	26%
6d	Coal	Wall-fired/PC	10-100	57	FF	28	Yes	NA	No	10%	Yes	NA
6e	Coal	Wall-fired/PC	10-100	57	FF/DSI	2	Yes	NA	Yes	NA	Yes	NA
6f	Coal	Wall-fired/PC	10-100	57	Wet Scrubber	12	No	94%	Yes	NA	Yes	NA
7a	Coal	Wall-fired/PC	100-250	186	No Control	12	No	97%	No	10%	No	26%
7b	Coal	Wall-fired/PC	100-250	186	Cyclone	5	No	89%	No	10%	No	26%
7c	Coal	Wall-fired/PC	100-250	186	Cyclone/Packed scrubber	5	No	89%	Yes	NA	Yes	NA
7d	Coal	Wall-fired/PC	100-250	186	ESP	93	Yes	NA	No	10%	No	26%
7e	Coal	Wall-fired/PC	100-250	186	FF	79	Yes	NA	No	10%	Yes	NA
7f	Coal	Wall-fired/PC	100-250	186	FF/SD	2	Yes	NA	Yes	NA	Yes	NA
7g	Coal	Wall-fired/PC	100-250	186	FF/Wet Scrubber	2	Yes	NA	Yes	NA	Yes	NA
7h	Coal	Wall-fired/PC	100-250	186	Wet Scrubber	14	No	94%	Yes	NA	Yes	NA
8a	Coal	Wall-fired/PC	>250	600	No Control	17	No	97%	No	10%	No	26%
8c	Coal	Wall-fired/PC	>250	600	ESP	196	Yes	NA	No	10%	No	26%
8d	Coal	Wall-fired/PC	>250	600	ESP/SD	5	Yes	NA	Yes	NA	No	26%
8e	Coal	Wall-fired/PC	>250	600	ESP/Packed scrubber	7	Yes	NA	Yes	NA	Yes	NA
8f	Coal	Wall-fired/PC	>250	600	ESP/Wet Scrubber	12	Yes	NA	Yes	NA	Yes	NA
8g	Coal	Wall-fired/PC	>250	600	FF	36	Yes	NA	No	10%	Yes	NA
8h	Coal	Wall-fired/PC	>250	600	FF/DSI	12	Yes	NA	Yes	NA	Yes	NA
8i	Coal	Wall-fired/PC	>250	600	FF/SD	2	Yes	NA	Yes	NA	Yes	NA
8j	Coal	Wall-fired/PC	>250	600	FF/Wet Scrubber	2	Yes	NA	Yes	NA	Yes	NA
8k	Coal	Wall-fired/PC	>250	600	Wet Scrubber	2	No	94%	Yes	NA	Yes	NA
9a	Coal/Wood/NFF Liquid/NFF Solid	All	0-10	6	No Control	2	NA	NA	NA	NA	NA	NA

Appendix A-2. Required Emission Reductions to Achieve MACT Floor Level of Control for Existing Sources

Model No	Material	Combustor Type	Capacity Range (MMBtu/hr)	Avg Capacity (MMBtu/hr)	Baseline Control Level	No of Units	PM		HCl		Hg	
							Meets Floor limit?	% Difference	Meets Floor limit?	% Difference	Meets Floor limit?	% Difference
9b	Coal/Wood/NFF Liquid/NFF Solid	All	0-10	6	Cyclone	5	NA	NA	NA	NA	NA	NA
10a	Coal/Wood/NFF Liquid/NFF Solid	All	10-100	35	No Control	8	No	96%	Yes	NA	Yes	NA
10b	Coal/Wood/NFF Liquid/NFF Solid	All	10-100	35	Cyclone	54	No	83%	Yes	NA	Yes	NA
10c	Coal/Wood/NFF Liquid/NFF Solid	All	10-100	35	ESP	5	Yes	NA	Yes	NA	Yes	NA
11a	Coal/Wood/NFF Liquid/NFF Solid	All	100-250	173	Cyclone	3	No	83%	Yes	NA	Yes	NA
11b	Coal/Wood/NFF Liquid/NFF Solid	All	100-250	173	ESP	11	Yes	NA	Yes	NA	Yes	NA
11c	Coal/Wood/NFF Liquid/NFF Solid	All	100-250	173	Wet Scrubber	2	No	92%	Yes	NA	Yes	NA
11d	Coal/Wood/NFF Liquid/NFF Solid	All	100-250	173	FF	2	Yes	NA	Yes	NA	Yes	NA
12a	Coal/Wood/NFF Liquid/NFF Solid	All	>250	565	Cyclone	1	No	83%	Yes	NA	Yes	NA
12b	Coal/Wood/NFF Liquid/NFF Solid	All	>250	565	Cyclone/Packed scrubber	4	No	83%	Yes	NA	Yes	NA
12c	Coal/Wood/NFF Liquid/NFF Solid	All	>250	565	ESP	47	Yes	NA	Yes	NA	Yes	NA
12d	Coal/Wood/NFF Liquid/NFF Solid	All	>250	565	ESP/FSI	1	Yes	NA	Yes	NA	Yes	NA
12e	Coal/Wood/NFF Liquid/NFF Solid	All	>250	565	ESP/SD	4	Yes	NA	Yes	NA	Yes	NA
12f	Coal/Wood/NFF Liquid/NFF Solid	All	>250	565	FF	5	Yes	NA	Yes	NA	Yes	NA
12g	Coal/Wood/NFF Liquid/NFF Solid	All	>250	565	FF/FSI	7	Yes	NA	Yes	NA	Yes	NA
12h	Coal/Wood/NFF Liquid/NFF Solid	All	>250	565	FF/Wet Scrubber	2	Yes	NA	Yes	NA	Yes	NA
12i	Coal/Wood/NFF Liquid/NFF Solid	All	>250	565	Wet Scrubber	6	No	92%	Yes	NA	Yes	NA
13a	Gas	Other	0-10	3	No Control	26,737	NA	NA	NA	NA	NA	NA
13b	Gas	Other	0-10	3	Cyclone	119	NA	NA	NA	NA	NA	NA
13c	Gas	Other	0-10	3	ESP	119	NA	NA	NA	NA	NA	NA
13d	Gas	Other	0-10	3	FF	246	NA	NA	NA	NA	NA	NA
13e	Gas	Other	0-10	3	FF/DSI	5	NA	NA	NA	NA	NA	NA
13f	Gas	Other	0-10	3	FF/Wet Scrubber	9	NA	NA	NA	NA	NA	NA
13g	Gas	Other	0-10	3	Packed scrubber	9	NA	NA	NA	NA	NA	NA
13h	Gas	Other	0-10	3	Wet Scrubber	179	NA	NA	NA	NA	NA	NA
14a	Gas	Other	10-100	33	No Control	13,726	NA	NA	NA	NA	NA	NA
14b	Gas	Other	10-100	33	Cyclone	125	NA	NA	NA	NA	NA	NA
14c	Gas	Other	10-100	33	ESP	23	NA	NA	NA	NA	NA	NA
14d	Gas	Other	10-100	33	FF	98	NA	NA	NA	NA	NA	NA
14e	Gas	Other	10-100	33	FF/Wet Scrubber	13	NA	NA	NA	NA	NA	NA
14f	Gas	Other	10-100	33	Wet Scrubber	228	NA	NA	NA	NA	NA	NA
15a	Gas	Other	100-250	164	No Control	1,516	NA	NA	NA	NA	NA	NA
15b	Gas	Other	100-250	164	Cyclone	21	NA	NA	NA	NA	NA	NA
15c	Gas	Other	100-250	164	ESP	17	NA	NA	NA	NA	NA	NA
15d	Gas	Other	100-250	164	ESP/Wet Scrubber	5	NA	NA	NA	NA	NA	NA
15e	Gas	Other	100-250	164	FF	9	NA	NA	NA	NA	NA	NA
15f	Gas	Other	100-250	164	Wet Scrubber	50	NA	NA	NA	NA	NA	NA
16a	Gas	Other	>250	520	No Control	649	NA	NA	NA	NA	NA	NA
16b	Gas	Other	>250	520	Cyclone	19	NA	NA	NA	NA	NA	NA
16c	Gas	Other	>250	520	ESP	13	NA	NA	NA	NA	NA	NA
16d	Gas	Other	>250	520	Wet Scrubber	19	NA	NA	NA	NA	NA	NA
17a	Gas/Wood/Other Biomass/Liquid FF	All	0-10	6	No Control	10	NA	NA	NA	NA	NA	NA
17b	Gas/Wood/Other Biomass/Liquid FF	All	0-10	6	Cyclone	11	NA	NA	NA	NA	NA	NA
17c	Gas/Wood/Other Biomass/Liquid FF	All	0-10	6	FF	2	NA	NA	NA	NA	NA	NA
17d	Gas/Wood/Other Biomass/Liquid FF	All	0-10	6	Wet Scrubber	2	NA	NA	NA	NA	NA	NA
18a	Gas/Wood/Other Biomass/Liquid FF	All	10-100	45	No Control	12	No	90%	Yes	NA	Yes	NA
18b	Gas/Wood/Other Biomass/Liquid FF	All	10-100	45	Cyclone	66	No	59%	Yes	NA	Yes	NA
18c	Gas/Wood/Other Biomass/Liquid FF	All	10-100	45	ESP	13	Yes	NA	Yes	NA	Yes	NA
18d	Gas/Wood/Other Biomass/Liquid FF	All	10-100	45	ESP/Wet Scrubber	1	Yes	NA	Yes	NA	Yes	NA
18e	Gas/Wood/Other Biomass/Liquid FF	All	10-100	45	FF	1	Yes	NA	Yes	NA	Yes	NA
18f	Gas/Wood/Other Biomass/Liquid FF	All	10-100	45	FF/Wet Scrubber	1	Yes	NA	Yes	NA	Yes	NA
18g	Gas/Wood/Other Biomass/Liquid FF	All	10-100	45	Wet Scrubber	3	No	79%	Yes	NA	Yes	NA
19b	Gas/Wood/Other Biomass/Liquid FF	All	100-250	178	Cyclone	5	No	59%	Yes	NA	Yes	NA
19c	Gas/Wood/Other Biomass/Liquid FF	All	100-250	178	Cyclone/Packed scrubber	1	No	59%	Yes	NA	Yes	NA
19d	Gas/Wood/Other Biomass/Liquid FF	All	100-250	178	ESP	12	Yes	NA	Yes	NA	Yes	NA

Appendix A-2. Required Emission Reductions to Achieve MACT Floor Level of Control for Existing Sources

Model No	Material	Combustor Type	Capacity Range (MMBtu/hr)	Avg Capacity (MMBtu/hr)	Baseline Control Level	No of Units	PM		HCI		Hg	
							Meets Floor limit?	% Difference	Meets Floor limit?	% Difference	Meets Floor limit?	% Difference
19e	Gas/Wood/Other Biomass/Liquid FF	All	100-250	178	ESP/Wet Scrubber	1	Yes	NA	Yes	NA	Yes	NA
19f	Gas/Wood/Other Biomass/Liquid FF	All	100-250	178	Wet Scrubber	15	No	79%	Yes	NA	Yes	NA
20a	Gas/Wood/Other Biomass/Liquid FF	All	>250	394	Cyclone	5	No	59%	Yes	NA	Yes	NA
20b	Gas/Wood/Other Biomass/Liquid FF	All	>250	394	ESP	11	Yes	NA	Yes	NA	Yes	NA
20c	Gas/Wood/Other Biomass/Liquid FF	All	>250	394	ESP/Wet Scrubber	2	Yes	NA	Yes	NA	Yes	NA
20d	Gas/Wood/Other Biomass/Liquid FF	All	>250	394	FF	3	Yes	NA	Yes	NA	Yes	NA
20e	Gas/Wood/Other Biomass/Liquid FF	All	>250	394	Wet Scrubber	24	No	79%	Yes	NA	Yes	NA
21a	Distillate Liquid FF	All	0-10	3	No Control	2,066	NA	NA	NA	NA	NA	NA
21b	Distillate Liquid FF	All	0-10	3	Cyclone	18	NA	NA	NA	NA	NA	NA
21d	Distillate Liquid FF	All	0-10	3	FF	52	NA	NA	NA	NA	NA	NA
21e	Distillate Liquid FF	All	0-10	3	Wet Scrubber	11	NA	NA	NA	NA	NA	NA
22a	Distillate Liquid FF	All	10-100	29	No Control	888	NA	NA	NA	NA	NA	NA
22b	Distillate Liquid FF	All	10-100	29	Cyclone	6	NA	NA	NA	NA	NA	NA
22c	Distillate Liquid FF	All	10-100	29	ESP	6	NA	NA	NA	NA	NA	NA
22d	Distillate Liquid FF	All	10-100	29	FF	9	NA	NA	NA	NA	NA	NA
22g	Distillate Liquid FF	All	10-100	29	Wet Scrubber	6	NA	NA	NA	NA	NA	NA
23a	Distillate Liquid FF	All	100-250	157	No Control	93	NA	NA	NA	NA	NA	NA
23b	Distillate Liquid FF	All	100-250	157	Cyclone	3	NA	NA	NA	NA	NA	NA
23d	Distillate Liquid FF	All	100-250	157	FF	3	NA	NA	NA	NA	NA	NA
23f	Distillate Liquid FF	All	100-250	157	Wet Scrubber	6	NA	NA	NA	NA	NA	NA
24a	Distillate Liquid FF	All	>250	355	No Control	104	NA	NA	NA	NA	NA	NA
24d	Distillate Liquid FF	All	>250	355	ESP	3	NA	NA	NA	NA	NA	NA
25a	NFF Liquid/NFF Solid/Gas	All	0-10	6	No Control	6	NA	NA	NA	NA	NA	NA
25b	NFF Liquid/NFF Solid/Gas	All	0-10	6	Cyclone	4	NA	NA	NA	NA	NA	NA
26a	NFF Liquid/NFF Solid/Gas	All	10-100	58	No Control	32	No	98%	Yes	NA	No	19%
26b	NFF Liquid/NFF Solid/Gas	All	10-100	58	Cyclone	10	No	90%	Yes	NA	No	19%
26c	NFF Liquid/NFF Solid/Gas	All	10-100	58	ESP	3	Yes	NA	Yes	NA	No	19%
26d	NFF Liquid/NFF Solid/Gas	All	10-100	58	FF	7	Yes	NA	Yes	NA	Yes	NA
26e	NFF Liquid/NFF Solid/Gas	All	10-100	58	FF/SD	3	Yes	NA	Yes	NA	Yes	NA
26f	NFF Liquid/NFF Solid/Gas	All	10-100	58	Wet Scrubber	1	No	95%	Yes	NA	Yes	NA
27a	NFF Liquid/NFF Solid/Gas	All	100-250	161	No Control	25	No	98%	Yes	NA	No	19%
27b	NFF Liquid/NFF Solid/Gas	All	100-250	161	ESP	7	Yes	NA	Yes	NA	No	19%
27c	NFF Liquid/NFF Solid/Gas	All	100-250	161	ESP/Wet Scrubber	1	Yes	NA	Yes	NA	Yes	NA
27d	NFF Liquid/NFF Solid/Gas	All	100-250	161	FF	1	Yes	NA	Yes	NA	Yes	NA
27e	NFF Liquid/NFF Solid/Gas	All	100-250	161	Cyclone	1	No	90%	Yes	NA	No	19%
27f	NFF Liquid/NFF Solid/Gas	All	100-250	161	Wet Scrubber	3	No	95%	Yes	NA	Yes	NA
28a	NFF Liquid/NFF Solid/Gas	All	>250	562	No Control	13	No	98%	Yes	NA	No	19%
28b	NFF Liquid/NFF Solid/Gas	All	>250	562	ESP	5	Yes	NA	Yes	NA	No	19%
28c	NFF Liquid/NFF Solid/Gas	All	>250	562	Wet Scrubber	4	No	95%	Yes	NA	Yes	NA
29a	Wood	Other	0-10	5	No Control	80	NA	NA	NA	NA	NA	NA
29b	Wood	Other	0-10	5	Cyclone	80	NA	NA	NA	NA	NA	NA
29c	Wood	Other	0-10	5	FF	4	NA	NA	NA	NA	NA	NA
30a	Wood	Other	10-100	30	No Control	76	No	96%	Yes	NA	Yes	NA
30b	Wood	Other	10-100	30	Cyclone	264	No	83%	Yes	NA	Yes	NA
30c	Wood	Other	10-100	30	ESP	23	Yes	NA	Yes	NA	Yes	NA
30d	Wood	Other	10-100	30	FF	14	Yes	NA	Yes	NA	Yes	NA
30e	Wood	Other	10-100	30	Wet Scrubber	29	No	92%	Yes	NA	Yes	NA
31a	Wood	Other	100-250	179	No Control	2	No	96%	Yes	NA	Yes	NA
31b	Wood	Other	100-250	179	Cyclone	9	No	83%	Yes	NA	Yes	NA
31c	Wood	Other	100-250	179	Cyclone/Packed scrubber	1	No	83%	Yes	NA	Yes	NA
31d	Wood	Other	100-250	179	ESP	21	Yes	NA	Yes	NA	Yes	NA
31e	Wood	Other	100-250	179	Wet Scrubber	29	No	92%	Yes	NA	Yes	NA
32a	Wood	Other	>250	449	No Control	2	No	96%	Yes	NA	Yes	NA
32b	Wood	Other	>250	449	Cyclone	3	No	83%	Yes	NA	Yes	NA
32c	Wood	Other	>250	449	ESP	14	Yes	NA	Yes	NA	Yes	NA

Appendix A-2. Required Emission Reductions to Achieve MACT Floor Level of Control for Existing Sources

Model No	Material	Combustor Type	Capacity Range (MMBtu/hr)	Avg Capacity (MMBtu/hr)	Baseline Control Level	No of Units	PM		HCI		Hg	
							Meets Floor limit?	% Difference	Meets Floor limit?	% Difference	Meets Floor limit?	% Difference
32d	Wood	Other	>250	449	Wet Scrubber	5	No	92%	Yes	NA	Yes	NA
33a	Wood	Wall-fired/PC	0-10	7	No Control	10	NA	NA	NA	NA	NA	NA
33b	Wood	Wall-fired/PC	0-10	7	Cyclone	5	NA	NA	NA	NA	NA	NA
34a	Wood	Wall-fired/PC	10-100	26	No Control	2	No	96%	Yes	NA	Yes	NA
34b	Wood	Wall-fired/PC	10-100	26	Cyclone	28	No	83%	Yes	NA	Yes	NA
34c	Wood	Wall-fired/PC	10-100	26	FF	1	Yes	NA	Yes	NA	Yes	NA
34d	Wood	Wall-fired/PC	10-100	26	Wet Scrubber	1	No	92%	Yes	NA	Yes	NA
35a	Wood	Wall-fired/PC	>250	677	ESP	1	Yes	NA	Yes	NA	Yes	NA
35b	Wood	Wall-fired/PC	>250	677	ESP/Wet Scrubber	1	Yes	NA	Yes	NA	Yes	NA
36a	Wood/Other Biomass/NFF Liquid/NFF Solid	All	0-10	7	No Control	3	NA	NA	NA	NA	NA	NA
36b	Wood/Other Biomass/NFF Liquid/NFF Solid	All	0-10	7	Cyclone	2	NA	NA	NA	NA	NA	NA
36c	Wood/Other Biomass/NFF Liquid/NFF Solid	All	0-10	7	ESP	1	NA	NA	NA	NA	NA	NA
36e	Wood/Other Biomass/NFF Liquid/NFF Solid	All	0-10	7	Wet Scrubber	5	NA	NA	NA	NA	NA	NA
37a	Wood/Other Biomass/NFF Liquid/NFF Solid	All	10-100	44	No Control	3	No	95%	Yes	NA	Yes	NA
37b	Wood/Other Biomass/NFF Liquid/NFF Solid	All	10-100	44	Cyclone	12	No	78%	Yes	NA	Yes	NA
37c	Wood/Other Biomass/NFF Liquid/NFF Solid	All	10-100	44	Cyclone/Packed scrubber	1	No	78%	Yes	NA	Yes	NA
37d	Wood/Other Biomass/NFF Liquid/NFF Solid	All	10-100	44	ESP	3	Yes	NA	Yes	NA	Yes	NA
37e	Wood/Other Biomass/NFF Liquid/NFF Solid	All	10-100	44	FF	7	Yes	NA	Yes	NA	Yes	NA
37f	Wood/Other Biomass/NFF Liquid/NFF Solid	All	10-100	44	Wet Scrubber	6	No	89%	Yes	NA	Yes	NA
38a	Wood/Other Biomass/NFF Liquid/NFF Solid	All	100-250	173	Cyclone	1	No	78%	Yes	NA	Yes	NA
38b	Wood/Other Biomass/NFF Liquid/NFF Solid	All	100-250	173	Cyclone/Packed scrubber	1	No	78%	Yes	NA	Yes	NA
38c	Wood/Other Biomass/NFF Liquid/NFF Solid	All	100-250	173	ESP	15	Yes	NA	Yes	NA	Yes	NA
38d	Wood/Other Biomass/NFF Liquid/NFF Solid	All	100-250	173	FF	4	Yes	NA	Yes	NA	Yes	NA
38e	Wood/Other Biomass/NFF Liquid/NFF Solid	All	100-250	173	FF/FSI	1	Yes	NA	Yes	NA	Yes	NA
38f	Wood/Other Biomass/NFF Liquid/NFF Solid	All	100-250	173	FF/Wet Scrubber	1	Yes	NA	Yes	NA	Yes	NA
38g	Wood/Other Biomass/NFF Liquid/NFF Solid	All	100-250	173	Wet Scrubber	15	No	89%	Yes	NA	Yes	NA
39a	Wood/Other Biomass/NFF Liquid/NFF Solid	All	>250	513	No Control	1	No	95%	Yes	NA	Yes	NA
39b	Wood/Other Biomass/NFF Liquid/NFF Solid	All	>250	513	Cyclone	4	No	78%	Yes	NA	Yes	NA
39c	Wood/Other Biomass/NFF Liquid/NFF Solid	All	>250	513	ESP	26	Yes	NA	Yes	NA	Yes	NA
39e	Wood/Other Biomass/NFF Liquid/NFF Solid	All	>250	513	ESP/Wet Scrubber	1	Yes	NA	Yes	NA	Yes	NA
39f	Wood/Other Biomass/NFF Liquid/NFF Solid	All	>250	513	FF	1	Yes	NA	Yes	NA	Yes	NA
39g	Wood/Other Biomass/NFF Liquid/NFF Solid	All	>250	513	Wet Scrubber	33	No	89%	Yes	NA	Yes	NA
40a	Residual Liquid FF	All	0-10	3	No Control	540	NA	NA	NA	NA	NA	NA
40b	Residual Liquid FF	All	0-10	3	Cyclone	3	NA	NA	NA	NA	NA	NA
40d	Residual Liquid FF	All	0-10	3	FF	9	NA	NA	NA	NA	NA	NA
41a	Residual Liquid FF	All	10-100	37	No Control	1,556	NA	NA	NA	NA	NA	NA
41b	Residual Liquid FF	All	10-100	37	Cyclone	44	NA	NA	NA	NA	NA	NA
41c	Residual Liquid FF	All	10-100	37	ESP	4	NA	NA	NA	NA	NA	NA
41d	Residual Liquid FF	All	10-100	37	FF	34	NA	NA	NA	NA	NA	NA
41g	Residual Liquid FF	All	10-100	37	Wet Scrubber	32	NA	NA	NA	NA	NA	NA
42a	Residual Liquid FF	All	100-250	172	No Control	245	NA	NA	NA	NA	NA	NA
42b	Residual Liquid FF	All	100-250	172	Cyclone	53	NA	NA	NA	NA	NA	NA
42c	Residual Liquid FF	All	100-250	172	ESP	14	NA	NA	NA	NA	NA	NA
42d	Residual Liquid FF	All	100-250	172	FF	2	NA	NA	NA	NA	NA	NA
42e	Residual Liquid FF	All	100-250	172	Packed scrubber	2	NA	NA	NA	NA	NA	NA
42f	Residual Liquid FF	All	100-250	172	Wet Scrubber	14	NA	NA	NA	NA	NA	NA
43a	Residual Liquid FF	All	>250	547	No Control	142	NA	NA	NA	NA	NA	NA
43b	Residual Liquid FF	All	>250	547	Cyclone	11	NA	NA	NA	NA	NA	NA
43d	Residual Liquid FF	All	>250	547	ESP	5	NA	NA	NA	NA	NA	NA
44a	Bagasse/Other	All	10-100	72	Cyclone	9	NA	NA	Yes	NA	Yes	NA
44b	Bagasse/Other	All	10-100	72	Wet Scrubber	27	NA	NA	Yes	NA	Yes	NA
45a	Bagasse/Other	All	100-250	158	No Control	2	NA	NA	Yes	NA	Yes	NA
45b	Bagasse/Other	All	100-250	158	Cyclone	13	NA	NA	Yes	NA	Yes	NA
45c	Bagasse/Other	All	100-250	158	Wet Scrubber	21	NA	NA	Yes	NA	Yes	NA
46a	Bagasse/Other	All	>250	419	ESP	2	NA	NA	Yes	NA	Yes	NA

Appendix A-2. Required Emission Reductions to Achieve MACT Floor Level of Control for Existing Sources

Model No	Material	Combustor Type	Capacity Range (MMBtu/hr)	Avg Capacity (MMBtu/hr)	Baseline Control Level	No of Units	PM		HCl		Hg	
							Meets Floor limit?	% Difference	Meets Floor limit?	% Difference	Meets Floor limit?	% Difference
46b	Bagasse/Other	All	>250	419	ESP/Activated Carbon Adsorption	8	NA	NA	Yes	NA	Yes	NA
46c	Bagasse/Other	All	>250	419	Wet Scrubber	50	NA	NA	Yes	NA	Yes	NA
47a	Coal	Other	0-10	4	No Control	36	No	91%	NA	NA	NA	NA
48a	Coal	Other	10-100	54	No Control	10	No	91%	NA	NA	NA	NA
48b	Coal	Other	10-100	54	Cyclone	54	No	63%	NA	NA	NA	NA
48c	Coal	Other	10-100	54	ESP	3	Yes	NA	NA	NA	NA	NA
48d	Coal	Other	10-100	54	FF	3	Yes	NA	NA	NA	NA	NA
49b	Coal	Other	100-250	166	Cyclone	26	No	63%	NA	NA	NA	NA
49c	Coal	Other	100-250	166	ESP	3	Yes	NA	NA	NA	NA	NA
50c	Coal	Other	>250	565	ESP	5	Yes	NA	NA	NA	NA	NA
50f	Coal	Other	>250	565	FF	2	Yes	NA	NA	NA	NA	NA
52a	Coal	Wall-fired/PC	10-100	57	No Control	9	No	91%	NA	NA	NA	NA
52b	Coal	Wall-fired/PC	10-100	57	Cyclone	18	No	63%	NA	NA	NA	NA
52f	Coal	Wall-fired/PC	10-100	57	Wet Scrubber	5	No	81%	NA	NA	NA	NA
53b	Coal	Wall-fired/PC	100-250	186	Cyclone	6	No	63%	NA	NA	NA	NA
53d	Coal	Wall-fired/PC	100-250	186	ESP	3	Yes	NA	NA	NA	NA	NA
54c	Coal	Wall-fired/PC	>250	600	ESP	15	Yes	NA	NA	NA	NA	NA
55b	Coal/Wood/NFF Liquid/NFF Solid	All	0-10	6	Cyclone	1	No	43%	NA	NA	NA	NA
56b	Coal/Wood/NFF Liquid/NFF Solid	All	10-100	35	Cyclone	2	No	43%	NA	NA	NA	NA
57d	Coal/Wood/NFF Liquid/NFF Solid	All	100-250	173	FF	1	Yes	NA	NA	NA	NA	NA
58a	Gas	Other	0-10	3	No Control	1,938	NA	NA	NA	NA	NA	NA
58d	Gas	Other	0-10	3	FF	35	NA	NA	NA	NA	NA	NA
58h	Gas	Other	0-10	3	Wet Scrubber	16	NA	NA	NA	NA	NA	NA
59a	Gas	Other	10-100	33	No Control	781	NA	NA	NA	NA	NA	NA
59b	Gas	Other	10-100	33	Cyclone	16	NA	NA	NA	NA	NA	NA
59d	Gas	Other	10-100	33	FF	13	NA	NA	NA	NA	NA	NA
59e	Gas	Other	10-100	33	FF/Wet Scrubber	7	NA	NA	NA	NA	NA	NA
59f	Gas	Other	10-100	33	Wet Scrubber	2	NA	NA	NA	NA	NA	NA
60a	Gas	Other	100-250	164	No Control	86	NA	NA	NA	NA	NA	NA
60b	Gas	Other	100-250	164	Cyclone	2	NA	NA	NA	NA	NA	NA
60e	Gas	Other	100-250	164	FF	2	NA	NA	NA	NA	NA	NA
61a	Gas	Other	>250	520	No Control	40	NA	NA	NA	NA	NA	NA
62a	Gas/Wood/Other Biomass/Liquid FF	All	0-10	6	No Control	1	No	65%	NA	NA	NA	NA
62b	Gas/Wood/Other Biomass/Liquid FF	All	0-10	6	Cyclone	1	Yes	NA	NA	NA	NA	NA
63a	Gas/Wood/Other Biomass/Liquid FF	All	10-100	45	No Control	2	No	65%	NA	NA	NA	NA
63b	Gas/Wood/Other Biomass/Liquid FF	All	10-100	45	Cyclone	1	Yes	NA	NA	NA	NA	NA
64d	Gas/Wood/Other Biomass/Liquid FF	All	100-250	178	ESP	1	Yes	NA	NA	NA	NA	NA
64e	Gas/Wood/Other Biomass/Liquid FF	All	100-250	178	ESP/Wet Scrubber	1	Yes	NA	NA	NA	NA	NA
65e	Gas/Wood/Other Biomass/Liquid FF	All	>250	394	Wet Scrubber	1	No	31%	NA	NA	NA	NA
66a	Distillate Liquid FF	All	0-10	3	No Control	428	NA	NA	NA	NA	NA	NA
67a	Distillate Liquid FF	All	10-100	29	No Control	215	NA	NA	NA	NA	NA	NA
67d	Distillate Liquid FF	All	10-100	29	FF	3	NA	NA	NA	NA	NA	NA
68a	Distillate Liquid FF	All	100-250	157	No Control	43	NA	NA	NA	NA	NA	NA
69a	Distillate Liquid FF	All	>250	355	No Control	11	NA	NA	NA	NA	NA	NA
69d	Distillate Liquid FF	All	>250	355	ESP	3	NA	NA	NA	NA	NA	NA
70b	NFF Liquid/NFF Solid/Gas	All	10-100	58	Cyclone	4	No	67%	NA	NA	NA	NA
72b	NFF Liquid/NFF Solid/Gas	All	>250	562	ESP	1	Yes	NA	NA	NA	NA	NA
73a	Wood	Other	0-10	5	No Control	6	No	86%	NA	NA	NA	NA
73b	Wood	Other	0-10	5	Cyclone	8	No	42%	NA	NA	NA	NA
74a	Wood	Other	10-100	30	No Control	4	No	86%	NA	NA	NA	NA
74b	Wood	Other	10-100	30	Cyclone	2	No	42%	NA	NA	NA	NA
74e	Wood	Other	10-100	30	Wet Scrubber	2	No	71%	NA	NA	NA	NA
75e	Wood	Other	100-250	179	Wet Scrubber	1	No	71%	NA	NA	NA	NA
76b	Wood	Wall-fired/PC	0-10	7	Cyclone	3	No	42%	NA	NA	NA	NA
77b	Wood	Wall-fired/PC	10-100	26	Cyclone	2	No	42%	NA	NA	NA	NA

Appendix A-2. Required Emission Reductions to Achieve MACT Floor Level of Control for Existing Sources

Model No	Material	Combustor Type	Capacity Range (MMBtu/hr)	Avg Capacity (MMBtu/hr)	Baseline Control Level	No of Units	PM		HCl		Hg	
							Meets Floor limit?	% Difference	Meets Floor limit?	% Difference	Meets Floor limit?	% Difference
78a	Wood/Other Biomass/NFF Liquid/NFF Solid	All	0-10	7	No Control	2	No	81%	NA	NA	NA	NA
79b	Wood/Other Biomass/NFF Liquid/NFF Solid	All	10-100	44	Cyclone	3	No	26%	NA	NA	NA	NA
79d	Wood/Other Biomass/NFF Liquid/NFF Solid	All	10-100	44	ESP	1	Yes	NA	NA	NA	NA	NA
80a	Residual Liquid FF	All	0-10	3	No Control	167	NA	NA	NA	NA	NA	NA
81a	Residual Liquid FF	All	10-100	37	No Control	318	NA	NA	NA	NA	NA	NA
81g	Residual Liquid FF	All	10-100	37	Wet Scrubber	9	NA	NA	NA	NA	NA	NA
82a	Residual Liquid FF	All	100-250	172	No Control	63	NA	NA	NA	NA	NA	NA
83a	Residual Liquid FF	All	>250	547	No Control	7	NA	NA	NA	NA	NA	NA
Total						58,200						

Appendix A-3. Required Emission Reductions to Achieve MACT Floor Level of Control for New Sources

Model No	Material	Combustor Type	Capacity Range (MMBtu/hr)	Avg Capacity (MMBtu/hr)	Baseline Control Level	No of Units	HCl		PM		Hg	
							Meets Floor limit?	% difference	Meets Floor limit?	% difference	Meets Floor limit?	% difference
1	Coal	Other	0-10	4	No Control	4	No	40%	No	98%	No	52%
2	Coal	Other	10-100	54	FF/Pack Scrub	44	Yes	NA	Yes	NA	Yes	NA
3	Coal	Other	100-250	166	FF/Pack Scrub	24	Yes	NA	Yes	NA	Yes	NA
4	Coal	Other	>250	565	FF/Pack Scrub	10	Yes	NA	Yes	NA	Yes	NA
5	Coal	Wall-fired/PC	0-10	2	No Control	1	No	40%	No	98%	No	52%
6	Coal	Wall-fired/PC	10-100	57	FF/Pack Scrub	5	Yes	NA	Yes	NA	Yes	NA
7	Coal	Wall-fired/PC	100-250	186	FF/Pack Scrub	10	Yes	NA	Yes	NA	Yes	NA
8	Coal	Wall-fired/PC	>250	600	FF/Pack Scrub	14	Yes	NA	Yes	NA	Yes	NA
9	Coal/Wood/NFF	All	0-10	6	No Control	1	Yes	NA	No	97%	Yes	NA
10	Coal/Wood/NFF	All	10-100	35	FF/Pack Scrub	5	Yes	NA	Yes	NA	Yes	NA
11	Coal/Wood/NFF	All	100-250	173	FF/Pack Scrub	1	Yes	NA	Yes	NA	Yes	NA
12	Coal/Wood/NFF	All	>250	565	FF/Pack Scrub	5	Yes	NA	Yes	NA	Yes	NA
13	Gas	All	0-10	3	No Control	2019	Yes	NA	Yes	NA	Yes	NA
14	Gas	All	10-100	33	No Control	1051	Yes	NA	Yes	NA	Yes	NA
15	Gas	All	100-250	164	No Control	119	Yes	NA	Yes	NA	Yes	NA
16	Gas	All	>250	520	No Control	52	Yes	NA	Yes	NA	Yes	NA
17	Gas/Wood/Other Biomass/Liquid FF	All	0-10	6	No Control	2	Yes	NA	No	93%	Yes	NA
18	Gas/Wood/Other Biomass/Liquid FF	All	10-100	45	FF	8	Yes	NA	Yes	NA	Yes	NA
19	Gas/Wood/Other Biomass/Liquid FF	All	100-250	178	FF	3	Yes	NA	Yes	NA	Yes	NA
20	Gas/Wood/Other Biomass/Liquid FF	All	>250	394	FF	4	Yes	NA	Yes	NA	Yes	NA
21	Distillate Liquid FF	All	0-10	3	No Control	164	Yes	NA	Yes	NA	Yes	NA
22	Distillate Liquid FF	All	10-100	29	No Control	71	Yes	NA	Yes	NA	Yes	NA
23	Distillate Liquid FF	All	100-250	157	No Control	9	Yes	NA	Yes	NA	Yes	NA
24	Distillate Liquid FF	All	>250	355	No Control	10	Yes	NA	Yes	NA	Yes	NA
25	NFF Liquid/NFF Solid/Gas	All	0-10	6	No Control	0	Yes	NA	No	98%	No	47%
26	NFF Liquid/NFF Solid/Gas	All	10-100	58	FF	1	No	46%	Yes	NA	Yes	NA
27	NFF Liquid/NFF Solid/Gas	All	100-250	161	FF	1	No	46%	Yes	NA	Yes	NA
28	NFF Liquid/NFF Solid/Gas	All	>250	562	FF	1	No	46%	Yes	NA	Yes	NA
29	Wood	Other	0-10	5	No Control	15	Yes	NA	No	97%	Yes	NA
30	Wood	Other	10-100	30	FF	38	Yes	NA	Yes	NA	Yes	NA
31	Wood	Other	100-250	179	FF	6	Yes	NA	Yes	NA	Yes	NA
32	Wood	Other	>250	449	FF	2	Yes	NA	Yes	NA	Yes	NA
33	Wood	Wall-fired/PC	0-10	7	No Control	1	Yes	NA	No	97%	Yes	NA
34	Wood	Wall-fired/PC	10-100	26	FF	3	Yes	NA	Yes	NA	Yes	NA
35	Wood	Wall-fired/PC	>250	677	FF	0	Yes	NA	Yes	NA	Yes	NA
36	Wood/Other Biomass/NFF	All	0-10	7	No Control	1	Yes	NA	No	96%	No	40%
37	Wood/Other Biomass/NFF	All	10-100	44	FF	3	Yes	NA	Yes	NA	Yes	NA
38	Wood/Other Biomass/NFF	All	100-250	173	FF	3	Yes	NA	Yes	NA	Yes	NA
39	Wood/Other Biomass/NFF	All	>250	513	FF	5	Yes	NA	Yes	NA	Yes	NA
40	Residual Liquid FF	All	0-10	3	No Control	0	Yes	NA	No	75%	Yes	NA
41	Residual Liquid FF	All	10-100	37	Pack Scrub	0	Yes	NA	No	50%	Yes	NA
42	Residual Liquid FF	All	100-250	172	Pack Scrub	0	Yes	NA	No	50%	Yes	NA
43	Residual Liquid FF	All	>250	547	Pack Scrub	0	Yes	NA	No	50%	Yes	NA

Appendix A-3. Required Emission Reductions to Achieve MACT Floor Level of Control for New Sources

Model No	Material	Combustor Type	Capacity Range (MMBtu/hr)	Avg Capacity (MMBtu/hr)	Baseline Control Level	No of Units	HCl		PM		Hg	
							Meets Floor limit?	% difference	Meets Floor limit?	% difference	Meets Floor limit?	% difference
44	Bagasse/Other	All	10-100	72	FF	4	Yes	NA	Yes	NA	Yes	NA
45	Bagasse/Other	All	100-250	158	FF	4	Yes	NA	Yes	NA	Yes	NA
46	Bagasse/Other	All	>250	419	FF	7	Yes	NA	Yes	NA	Yes	NA
47	Coal	Other	0-10	4	No Control	2	No	40%	No	98%	No	52%
48	Coal	Other	10-100	54	FF/Pack Scrub	3	Yes	NA	Yes	NA	Yes	NA
49	Coal	Other	100-250	466	FF/Pack Scrub	1	Yes	NA	Yes	NA	Yes	NA
50	Coal	Other	>250	565	FF/Pack Scrub	0	Yes	NA	Yes	NA	Yes	NA
52	Coal	Wall-fired/PC	10-100	57	FF/Pack Scrub	2	Yes	NA	Yes	NA	Yes	NA
53	Coal	Wall-fired/PC	100-250	186	FF/Pack Scrub	0	Yes	NA	Yes	NA	Yes	NA
54	Coal	Wall-fired/PC	>250	600	FF/Pack Scrub	1	Yes	NA	Yes	NA	Yes	NA
55	Coal/Wood/NFF	All	0-10	6	No Control	0	Yes	NA	No	97%	Yes	NA
56	Coal/Wood/NFF	All	10-100	35	FF/Pack Scrub	0	Yes	NA	Yes	NA	Yes	NA
57	Coal/Wood/NFF	All	100-250	173	FF/Pack Scrub	0	Yes	NA	Yes	NA	Yes	NA
58	Gas	Other	0-10	3	No Control	151	Yes	NA	Yes	NA	Yes	NA
59	Gas	Other	10-100	33	No Control	61	Yes	NA	Yes	NA	Yes	NA
60	Gas	Other	100-250	164	No Control	7	Yes	NA	Yes	NA	Yes	NA
61	Gas	Other	>250	520	No Control	3	Yes	NA	Yes	NA	Yes	NA
62	Gas/Wood/Other Biomass/Liquid FF	All	0-10	6	No Control	0	Yes	NA	No	93%	Yes	NA
63	Gas/Wood/Other Biomass/Liquid FF	All	10-100	45	FF	0	Yes	NA	Yes	NA	Yes	NA
64	Gas/Wood/Other Biomass/Liquid FF	All	100-250	178	FF	0	Yes	NA	Yes	NA	Yes	NA
65	Gas/Wood/Other Biomass/Liquid FF	All	>250	394	FF	0	Yes	NA	Yes	NA	Yes	NA
66	Distillate Liquid FF	All	0-10	3	No Control	31	Yes	NA	Yes	NA	Yes	NA
67	Distillate Liquid FF	All	10-100	29	No Control	16	Yes	NA	Yes	NA	Yes	NA
68	Distillate Liquid FF	All	100-250	157	No Control	3	Yes	NA	Yes	NA	Yes	NA
69	Distillate Liquid FF	All	>250	355	No Control	1	Yes	NA	Yes	NA	Yes	NA
70	NFF Liquid/NFF Solid/Gas	All	10-100	58	FF	0	Yes	NA	Yes	NA	Yes	NA
72	NFF Liquid/NFF Solid/Gas	All	>250	562	FF	0	Yes	NA	Yes	NA	Yes	NA
73	Wood	Other	0-10	5	No Control	1	Yes	NA	No	97%	Yes	NA
74	Wood	Other	10-100	30	FF	1	Yes	NA	Yes	NA	Yes	NA
75	Wood	Other	100-250	179	FF	0	Yes	NA	Yes	NA	Yes	NA
76	Wood	Wall-fired/PC	0-10	7	No Control	0	Yes	NA	No	97%	Yes	NA
77	Wood	Wall-fired/PC	10-100	26	FF	0	Yes	NA	Yes	NA	Yes	NA
78	Wood/Other Biomass/NFF	All	0-10	7	No Control	0	Yes	NA	No	96%	No	40%
79	Wood/Other Biomass/NFF	All	10-100	44	FF	0	Yes	NA	Yes	NA	Yes	NA
80	Residual Liquid FF	All	0-10	3	No Control	0	Yes	NA	No	50%	Yes	NA
81	Residual Liquid FF	All	10-100	37	Pack Scrub	0	Yes	NA	No	50%	Yes	NA
82	Residual Liquid FF	All	100-250	172	Pack Scrub	0	Yes	NA	No	50%	Yes	NA
83	Residual Liquid FF	All	>250	547	Pack Scrub	0	Yes	NA	No	50%	Yes	NA
Total						4,015						

Control Device	Pollutant	Assigned % Reduction
Cyclone or mechanical collector	Organics	0
	PM	75
	Metals (except Hg)	10
	Inorganics (I.e.HCl)	0
	Mercury	0
ESP	Organics	0
	PM	98
	Metals (except Hg)	95
	Inorganics (I.e.HCl)	0
	Mercury	0
Fabric Filter	Organics	0
	PM	99
	Metals (except Hg)	99
	Inorganics (I.e.HCl)	0
	Mercury	75
High Efficiency Venturi Scrubber	Organics	0
	PM	98
	Metals (except Hg)	95
	Inorganics (I.e.HCl)	75
	Mercury	30
Packed Scrubber	Organics	0
	PM	50
	Metals (except Hg)	50
	Inorganics (I.e.HCl)	98
	Mercury	10
Wet Scrubber	Organics	0
	PM	50
	Metals (except Hg)	50
	Inorganics (I.e.HCl)	90
	Mercury	10
Spray Dryer/Fabric Filter	Organics	0
	PM	99.9
	Metals (except Hg)	99.9
	Inorganics (I.e.HCl)	90
	Mercury	75
Spray Dryer/ESP	Organics	0
	PM	99
	Metals (except Hg)	98
	Inorganics (I.e.HCl)	90
	Mercury	10

1 U.S. Environmental Protection Agency. Compilation of Air Pollution Emission Factors (AP-42), Fifth Edition, Volume 1: Stationary and Point Sources, Chapter 1: External Combustion Sources. January, 1996.

2 U.S. Environmental Protection Agency. Municipal Waste Combustors: Background Information for Proposed Standards: Post Combustion Technology Performance. EPA 450/3-89-27c. August, 1989.

3 EPA TTN website for Electric Utility Steam Generating Units, Section 112 Rulemaking:
["http://www.epa.gov/ttn/atw/combust/utltox/utoxpg.html"](http://www.epa.gov/ttn/atw/combust/utltox/utoxpg.html).

4 U.S. Environmental Protection Agency. Office of Air Quality Planning and Standards. OAQPS Control Cost Manual, Fifth Edition, Research Triangle Park. EPA 453/B-96-001. February, 1996.

5. U.S. Environmental Protection Agency. Control Technologies for Hazardous Air Pollutants, Research Triangle Park, NC. EPA 625/6-91/014. June 1991.

6 U.S. Environmental Protection Agency. Background Information for New Source Performance Standards: Nonfossil Fuel Fired Industrial Boilers. Draft EIS. EPA 450/3-82-007. 1982

7 Christy Burlew and Roy Oommen, Eastern Research Group (ERG). Memorandum to Jim Eddinger, U.S. Environmental Protection Agency, OAQPS. Development of Average Emission Factors and Baseline Emission Estimates for the Industrial, Commercial, and Institutional Boilers and Process Heaters National Emission Standard for Hazardous Air

Appendix A-5. Least Cost Control (\$/yr, Annualized Based) per Model to Meet MACT Floor for Existing Sources ¹

Model No	Material	Combustor Type	Capacity Range (MMBtu/hr)	Avg Capacity (MMBtu/hr)	Baseline Control Level	No of Units	meets PM limit?	meets HCl limit?	meets Hg limit?	Packed Scrubber	Venturi Scrubber	ESP	FF
1a	Coal	Other	0-10	4	No Control	48	NA	NA	NA	NA	NA	NA	NA
1b	Coal	Other	0-10	4	Cyclone	32	NA	NA	NA	NA	NA	NA	NA
1c	Coal	Other	0-10	4	FF	3	NA	NA	NA	NA	NA	NA	NA
2a	Coal	Other	10-100	54	No Control	154	No	No	No	93,697	209,396	177,194	127,865
2b	Coal	Other	10-100	54	Cyclone	436	No	No	No	93,697	209,395	129,435	118,195
2c	Coal	Other	10-100	54	ESP	123	Yes	No	No	93,697	209,396	NA	112,661
2d	Coal	Other	10-100	54	FF	181	Yes	No	Yes	93,697	209,396	NA	NA
2e	Coal	Other	10-100	54	FF/DSI	5	Yes	Yes	Yes	NA	NA	NA	NA
2f	Coal	Other	10-100	54	FF/SD	5	Yes	Yes	Yes	NA	NA	NA	NA
2g	Coal	Other	10-100	54	Wet Scrubber	15	No	Yes	Yes	NA	209,395	150,586	121,724
3a	Coal	Other	100-250	166	No Control	46	No	No	No	315,501	263,222	431,119	316,790
3b	Coal	Other	100-250	166	Cyclone	166	No	No	No	315,501	263,219	323,253	287,047
3c	Coal	Other	100-250	166	ESP	112	Yes	No	No	315,501	263,222	NA	270,009
3d	Coal	Other	100-250	166	ESP/Wet Scrubber	2	Yes	Yes	Yes	NA	NA	NA	NA
3e	Coal	Other	100-250	166	FF	160	Yes	No	Yes	315,501	263,222	NA	NA
3f	Coal	Other	100-250	166	FF/DSI	4	Yes	Yes	Yes	NA	NA	NA	NA
3g	Coal	Other	100-250	166	FF/Wet Scrubber	4	Yes	Yes	Yes	NA	NA	NA	NA
3h	Coal	Other	100-250	166	Wet Scrubber	15	No	Yes	Yes	NA	263,220	370,134	297,903
4a	Coal	Other	>250	565	No Control	24	No	No	No	1,315,672	426,581	961,162	702,881
4b	Coal	Other	>250	565	Cyclone	14	No	No	No	1,315,672	426,571	678,496	604,257
4c	Coal	Other	>250	565	ESP	40	Yes	No	No	1,315,672	426,581	NA	550,495
4d	Coal	Other	>250	565	ESP/DSI	2	Yes	Yes	No	1,348,292	426,568	NA	550,495
4e	Coal	Other	>250	565	ESP/Wet Scrubber	4	Yes	Yes	Yes	NA	NA	NA	NA
4f	Coal	Other	>250	565	FF	56	Yes	No	Yes	1,315,672	426,581	NA	NA
4g	Coal	Other	>250	565	FF/DSI	40	Yes	Yes	Yes	NA	NA	NA	NA
4h	Coal	Other	>250	565	FF/FSI	10	Yes	Yes	Yes	NA	NA	NA	NA
4i	Coal	Other	>250	565	FF/SD	6	Yes	Yes	Yes	NA	NA	NA	NA
4j	Coal	Other	>250	565	Wet Scrubber	8	No	Yes	Yes	NA	426,574	782,490	639,928
5a	Coal	Wall-fired/PC	0-10	2	No Control	10	NA	NA	NA	NA	NA	NA	NA
5b	Coal	Wall-fired/PC	0-10	2	Cyclone	2	NA	NA	NA	NA	NA	NA	NA
6a	Coal	Wall-fired/PC	10-100	57	No Control	14	No	No	No	95,983	210,933	184,129	131,037
6b	Coal	Wall-fired/PC	10-100	57	Cyclone	5	No	No	No	95,983	210,932	134,360	120,819
6c	Coal	Wall-fired/PC	10-100	57	ESP	37	Yes	No	No	95,983	210,933	NA	114,962
6d	Coal	Wall-fired/PC	10-100	57	FF	28	Yes	No	Yes	95,983	210,933	NA	NA
6e	Coal	Wall-fired/PC	10-100	57	FF/DSI	2	Yes	Yes	Yes	NA	NA	NA	NA
6f	Coal	Wall-fired/PC	10-100	57	Wet Scrubber	12	No	Yes	Yes	NA	210,933	156,386	124,549
7a	Coal	Wall-fired/PC	100-250	186	No Control	12	No	No	No	341,081	274,167	464,803	339,559
7b	Coal	Wall-fired/PC	100-250	186	Cyclone	5	No	No	No	341,081	274,163	347,708	306,259
7c	Coal	Wall-fired/PC	100-250	186	Cyclone/Packed scrubber	5	No	Yes	Yes	NA	274,163	347,708	306,259
7d	Coal	Wall-fired/PC	100-250	186	ESP	93	Yes	No	No	341,081	274,167	NA	287,212
7e	Coal	Wall-fired/PC	100-250	186	FF	79	Yes	No	Yes	341,081	274,167	NA	NA
7f	Coal	Wall-fired/PC	100-250	186	FF/SD	2	Yes	Yes	Yes	NA	NA	NA	NA
7g	Coal	Wall-fired/PC	100-250	186	FF/Wet Scrubber	2	Yes	Yes	Yes	NA	NA	NA	NA
7h	Coal	Wall-fired/PC	100-250	186	Wet Scrubber	14	No	Yes	Yes	NA	274,164	398,484	318,409
8a	Coal	Wall-fired/PC	>250	600	No Control	17	No	No	No	1,391,371	451,146	1,022,918	748,476
8c	Coal	Wall-fired/PC	>250	600	ESP	196	Yes	No	No	1,391,371	451,146	NA	586,650
8d	Coal	Wall-fired/PC	>250	600	ESP/SD	5	Yes	Yes	No	1,417,574	451,132	NA	586,650
8e	Coal	Wall-fired/PC	>250	600	ESP/Packed scrubber	7	Yes	Yes	Yes	NA	NA	NA	NA
8f	Coal	Wall-fired/PC	>250	600	ESP/Wet Scrubber	12	Yes	Yes	Yes	NA	NA	NA	NA
8g	Coal	Wall-fired/PC	>250	600	FF	36	Yes	No	Yes	1,391,371	451,146	NA	NA
8h	Coal	Wall-fired/PC	>250	600	FF/DSI	12	Yes	Yes	Yes	NA	NA	NA	NA

Appendix A-5. Least Cost Control (\$/yr, Annualized Based) per Model to Meet MACT Floor for Existing Sources ¹

Model No	Material	Combustor Type	Capacity Range (MMBtu/hr)	Avg Capacity (MMBtu/hr)	Baseline Control Level	No of Units	meets PM limit?	meets HCl limit?	meets Hg limit?	Packed Scrubber	Venturi Scrubber	ESP	FF
8i	Coal	Wall-fired/PC	>250	600	FF/SD	2	Yes	Yes	Yes	NA	NA	NA	NA
8j	Coal	Wall-fired/PC	>250	600	FF/Wet Scrubber	2	Yes	Yes	Yes	NA	NA	NA	NA
8k	Coal	Wall-fired/PC	>250	600	Wet Scrubber	2	No	Yes	Yes	NA	451,139	834,259	681,623
9a	Coal/Wood/NFF Liquid/NFF Solid	All	0-10	6	No Control	2	NA	NA	NA	NA	NA	NA	NA
9b	Coal/Wood/NFF Liquid/NFF Solid	All	0-10	6	Cyclone	5	NA	NA	NA	NA	NA	NA	NA
10a	Coal/Wood/NFF Liquid/NFF Solid	All	10-100	35	No Control	8	No	Yes	Yes	NA	197,848	121,576	105,231
10b	Coal/Wood/NFF Liquid/NFF Solid	All	10-100	35	Cyclone	54	No	Yes	Yes	NA	197,848	85,255	100,769
10c	Coal/Wood/NFF Liquid/NFF Solid	All	10-100	35	ESP	5	Yes	Yes	Yes	NA	NA	NA	NA
11a	Coal/Wood/NFF Liquid/NFF Solid	All	100-250	173	Cyclone	3	No	Yes	Yes	NA	254,793	284,799	276,915
11b	Coal/Wood/NFF Liquid/NFF Solid	All	100-250	173	ESP	11	Yes	Yes	Yes	NA	NA	NA	NA
11c	Coal/Wood/NFF Liquid/NFF Solid	All	100-250	173	Wet Scrubber	2	No	Yes	Yes	NA	254,793	341,980	285,214
11d	Coal/Wood/NFF Liquid/NFF Solid	All	100-250	173	FF	2	Yes	Yes	Yes	NA	NA	NA	NA
12a	Coal/Wood/NFF Liquid/NFF Solid	All	>250	565	Cyclone	1	No	Yes	Yes	NA	414,655	620,375	605,681
12b	Coal/Wood/NFF Liquid/NFF Solid	All	>250	565	Cyclone/Packed scrubber	4	No	Yes	Yes	NA	414,655	620,375	605,681
12c	Coal/Wood/NFF Liquid/NFF Solid	All	>250	565	ESP	47	Yes	Yes	Yes	NA	NA	NA	NA
12d	Coal/Wood/NFF Liquid/NFF Solid	All	>250	565	ESP/FSI	1	Yes	Yes	Yes	NA	NA	NA	NA
12e	Coal/Wood/NFF Liquid/NFF Solid	All	>250	565	ESP/SD	4	Yes	Yes	Yes	NA	NA	NA	NA
12f	Coal/Wood/NFF Liquid/NFF Solid	All	>250	565	FF	5	Yes	Yes	Yes	NA	NA	NA	NA
12g	Coal/Wood/NFF Liquid/NFF Solid	All	>250	565	FF/FSI	7	Yes	Yes	Yes	NA	NA	NA	NA
12h	Coal/Wood/NFF Liquid/NFF Solid	All	>250	565	FF/Wet Scrubber	2	Yes	Yes	Yes	NA	NA	NA	NA
12i	Coal/Wood/NFF Liquid/NFF Solid	All	>250	565	Wet Scrubber	6	No	Yes	Yes	NA	414,657	750,883	632,808
13a	Gas	Other	0-10	3	No Control	26,737	NA	NA	NA	NA	NA	NA	NA
13b	Gas	Other	0-10	3	Cyclone	119	NA	NA	NA	NA	NA	NA	NA
13c	Gas	Other	0-10	3	ESP	119	NA	NA	NA	NA	NA	NA	NA
13d	Gas	Other	0-10	3	FF	246	NA	NA	NA	NA	NA	NA	NA
13e	Gas	Other	0-10	3	FF/DSI	5	NA	NA	NA	NA	NA	NA	NA
13f	Gas	Other	0-10	3	FF/Wet Scrubber	9	NA	NA	NA	NA	NA	NA	NA
13g	Gas	Other	0-10	3	Packed scrubber	9	NA	NA	NA	NA	NA	NA	NA
13h	Gas	Other	0-10	3	Wet Scrubber	179	NA	NA	NA	NA	NA	NA	NA
14a	Gas	Other	10-100	33	No Control	13,726	NA	NA	NA	NA	NA	NA	NA
14b	Gas	Other	10-100	33	Cyclone	125	NA	NA	NA	NA	NA	NA	NA
14c	Gas	Other	10-100	33	ESP	23	NA	NA	NA	NA	NA	NA	NA
14d	Gas	Other	10-100	33	FF	98	NA	NA	NA	NA	NA	NA	NA
14e	Gas	Other	10-100	33	FF/Wet Scrubber	13	NA	NA	NA	NA	NA	NA	NA
14f	Gas	Other	10-100	33	Wet Scrubber	228	NA	NA	NA	NA	NA	NA	NA
15a	Gas	Other	100-250	164	No Control	1,516	NA	NA	NA	NA	NA	NA	NA
15b	Gas	Other	100-250	164	Cyclone	21	NA	NA	NA	NA	NA	NA	NA
15c	Gas	Other	100-250	164	ESP	17	NA	NA	NA	NA	NA	NA	NA
15d	Gas	Other	100-250	164	ESP/Wet Scrubber	5	NA	NA	NA	NA	NA	NA	NA
15e	Gas	Other	100-250	164	FF	9	NA	NA	NA	NA	NA	NA	NA
15f	Gas	Other	100-250	164	Wet Scrubber	50	NA	NA	NA	NA	NA	NA	NA
16a	Gas	Other	>250	520	No Control	649	NA	NA	NA	NA	NA	NA	NA
16b	Gas	Other	>250	520	Cyclone	19	NA	NA	NA	NA	NA	NA	NA
16c	Gas	Other	>250	520	ESP	13	NA	NA	NA	NA	NA	NA	NA
16d	Gas	Other	>250	520	Wet Scrubber	19	NA	NA	NA	NA	NA	NA	NA
17a	Gas/Wood/Other Biomass/Liquid FF	All	0-10	6	No Control	10	NA	NA	NA	NA	NA	NA	NA
17b	Gas/Wood/Other Biomass/Liquid FF	All	0-10	6	Cyclone	11	NA	NA	NA	NA	NA	NA	NA
17c	Gas/Wood/Other Biomass/Liquid FF	All	0-10	6	FF	2	NA	NA	NA	NA	NA	NA	NA
17d	Gas/Wood/Other Biomass/Liquid FF	All	0-10	6	Wet Scrubber	2	NA	NA	NA	NA	NA	NA	NA
18a	Gas/Wood/Other Biomass/Liquid FF	All	10-100	45	No Control	12	No	Yes	Yes	NA	201,522	114,201	108,977
18b	Gas/Wood/Other Biomass/Liquid FF	All	10-100	45	Cyclone	66	No	Yes	Yes	NA	201,521	68,094	105,810
18c	Gas/Wood/Other Biomass/Liquid FF	All	10-100	45	ESP	13	Yes	Yes	Yes	NA	NA	NA	NA
18d	Gas/Wood/Other Biomass/Liquid FF	All	10-100	45	ESP/Wet Scrubber	1	Yes	Yes	Yes	NA	NA	NA	NA
18e	Gas/Wood/Other Biomass/Liquid FF	All	10-100	45	FF	1	Yes	Yes	Yes	NA	NA	NA	NA

Appendix A-5. Least Cost Control (\$/yr, Annualized Based) per Model to Meet MACT Floor for Existing Sources ¹

Model No	Material	Combustor Type	Capacity Range (MMBtu/hr)	Avg Capacity (MMBtu/hr)	Baseline Control Level	No of Units	meets PM limit?	meets HCl limit?	meets Hg limit?	Packed Scrubber	Venturi Scrubber	ESP	FF
18f	Gas/Wood/Other Biomass/Liquid FF	All	10-100	45	FF/Wet Scrubber	1	Yes	Yes	Yes	NA	NA	NA	NA
18g	Gas/Wood/Other Biomass/Liquid FF	All	10-100	45	Wet Scrubber	3	No	Yes	Yes	NA	201,521	91,518	107,091
19b	Gas/Wood/Other Biomass/Liquid FF	All	100-250	178	Cyclone	5	No	Yes	Yes	NA	253,659	165,129	271,422
19c	Gas/Wood/Other Biomass/Liquid FF	All	100-250	178	Cyclone/Packed scrubber	1	No	Yes	Yes	NA	253,659	165,129	271,422
19d	Gas/Wood/Other Biomass/Liquid FF	All	100-250	178	ESP	12	Yes	Yes	Yes	NA	NA	NA	NA
19e	Gas/Wood/Other Biomass/Liquid FF	All	100-250	178	ESP/Wet Scrubber	1	Yes	Yes	Yes	NA	NA	NA	NA
19f	Gas/Wood/Other Biomass/Liquid FF	All	100-250	178	Wet Scrubber	15	No	Yes	Yes	NA	253,659	269,436	276,496
20a	Gas/Wood/Other Biomass/Liquid FF	All	>250	394	Cyclone	5	No	Yes	Yes	NA	326,181	166,748	425,593
20b	Gas/Wood/Other Biomass/Liquid FF	All	>250	394	ESP	11	Yes	Yes	Yes	NA	NA	NA	NA
20c	Gas/Wood/Other Biomass/Liquid FF	All	>250	394	ESP/Wet Scrubber	2	Yes	Yes	Yes	NA	NA	NA	NA
20d	Gas/Wood/Other Biomass/Liquid FF	All	>250	394	FF	3	Yes	Yes	Yes	NA	NA	NA	NA
20e	Gas/Wood/Other Biomass/Liquid FF	All	>250	394	Wet Scrubber	24	No	Yes	Yes	NA	326,181	433,563	436,835
21a	Distillate Liquid FF	All	0-10	3	No Control	2,066	NA	NA	NA	NA	NA	NA	NA
21b	Distillate Liquid FF	All	0-10	3	Cyclone	18	NA	NA	NA	NA	NA	NA	NA
21d	Distillate Liquid FF	All	0-10	3	FF	52	NA	NA	NA	NA	NA	NA	NA
21e	Distillate Liquid FF	All	0-10	3	Wet Scrubber	11	NA	NA	NA	NA	NA	NA	NA
22a	Distillate Liquid FF	All	10-100	29	No Control	888	NA	NA	NA	NA	NA	NA	NA
22b	Distillate Liquid FF	All	10-100	29	Cyclone	6	NA	NA	NA	NA	NA	NA	NA
22c	Distillate Liquid FF	All	10-100	29	ESP	6	NA	NA	NA	NA	NA	NA	NA
22d	Distillate Liquid FF	All	10-100	29	FF	9	NA	NA	NA	NA	NA	NA	NA
22g	Distillate Liquid FF	All	10-100	29	Wet Scrubber	6	NA	NA	NA	NA	NA	NA	NA
23a	Distillate Liquid FF	All	100-250	157	No Control	93	NA	NA	NA	NA	NA	NA	NA
23b	Distillate Liquid FF	All	100-250	157	Cyclone	3	NA	NA	NA	NA	NA	NA	NA
23d	Distillate Liquid FF	All	100-250	157	FF	3	NA	NA	NA	NA	NA	NA	NA
23f	Distillate Liquid FF	All	100-250	157	Wet Scrubber	6	NA	NA	NA	NA	NA	NA	NA
24a	Distillate Liquid FF	All	>250	355	No Control	104	NA	NA	NA	NA	NA	NA	NA
24d	Distillate Liquid FF	All	>250	355	ESP	3	NA	NA	NA	NA	NA	NA	NA
25a	NFF Liquid/NFF Solid/Gas	All	0-10	6	No Control	6	NA	NA	NA	NA	NA	NA	NA
25b	NFF Liquid/NFF Solid/Gas	All	0-10	6	Cyclone	4	NA	NA	NA	NA	NA	NA	NA
26a	NFF Liquid/NFF Solid/Gas	All	10-100	58	No Control	32	No	Yes	No	93,366	208,096	188,378	129,059
26b	NFF Liquid/NFF Solid/Gas	All	10-100	58	Cyclone	10	No	Yes	No	93,366	208,095	131,176	117,659
26c	NFF Liquid/NFF Solid/Gas	All	10-100	58	ESP	3	Yes	Yes	No	93,366	208,095	NA	111,590
26d	NFF Liquid/NFF Solid/Gas	All	10-100	58	FF	7	Yes	Yes	Yes	NA	NA	NA	NA
26e	NFF Liquid/NFF Solid/Gas	All	10-100	58	FF/SD	3	Yes	Yes	Yes	NA	NA	NA	NA
26f	NFF Liquid/NFF Solid/Gas	All	10-100	58	Wet Scrubber	1	No	Yes	Yes	NA	208,095	155,062	121,765
27a	NFF Liquid/NFF Solid/Gas	All	100-250	161	No Control	25	No	Yes	No	159,039	247,381	421,425	297,740
27b	NFF Liquid/NFF Solid/Gas	All	100-250	161	ESP	7	Yes	Yes	No	159,039	247,376	NA	249,274
27c	NFF Liquid/NFF Solid/Gas	All	100-250	161	ESP/Wet Scrubber	1	Yes	Yes	Yes	NA	NA	NA	NA
27d	NFF Liquid/NFF Solid/Gas	All	100-250	161	FF	1	Yes	Yes	Yes	NA	NA	NA	NA
27e	NFF Liquid/NFF Solid/Gas	All	100-250	161	Cyclone	1	No	Yes	No	159,039	247,377	301,598	266,106
27f	NFF Liquid/NFF Solid/Gas	All	100-250	161	Wet Scrubber	3	No	Yes	Yes	NA	247,378	350,898	277,498
28a	NFF Liquid/NFF Solid/Gas	All	>250	562	No Control	13	No	Yes	No	1,345,620	396,655	1,041,596	700,342
28b	NFF Liquid/NFF Solid/Gas	All	>250	562	ESP	5	Yes	Yes	No	1,345,620	396,640	NA	531,236
28c	NFF Liquid/NFF Solid/Gas	All	>250	562	Wet Scrubber	4	No	Yes	Yes	NA	396,647	811,849	629,700
29a	Wood	Other	0-10	5	No Control	80	NA	NA	NA	NA	NA	NA	NA
29b	Wood	Other	0-10	5	Cyclone	80	NA	NA	NA	NA	NA	NA	NA
29c	Wood	Other	0-10	5	FF	4	NA	NA	NA	NA	NA	NA	NA
30a	Wood	Other	10-100	30	No Control	76	No	Yes	Yes	NA	194,565	109,779	100,697
30b	Wood	Other	10-100	30	Cyclone	264	No	Yes	Yes	NA	194,565	77,310	96,897
30c	Wood	Other	10-100	30	ESP	23	Yes	Yes	Yes	NA	NA	NA	NA
30d	Wood	Other	10-100	30	FF	14	Yes	Yes	Yes	NA	NA	NA	NA
30e	Wood	Other	10-100	30	Wet Scrubber	29	No	Yes	Yes	NA	194,565	94,475	98,323
31a	Wood	Other	100-250	179	No Control	2	No	Yes	Yes	NA	254,406	400,678	302,339

Appendix A-5. Least Cost Control (\$/yr, Annualized Based) per Model to Meet MACT Floor for Existing Sources ¹

Model No	Material	Combustor Type	Capacity Range (MMBtu/hr)	Avg Capacity (MMBtu/hr)	Baseline Control Level	No of Units	meets PM limit?	meets HCl limit?	meets Hg limit?	Packed Scrubber	Venturi Scrubber	ESP	FF
31b	Wood	Other	100-250	179	Cyclone	9	No	Yes	Yes	NA	254,404	288,011	279,642
31c	Wood	Other	100-250	179	Cyclone/Packed scrubber	1	No	Yes	Yes	NA	254,404	288,011	279,642
31d	Wood	Other	100-250	179	ESP	21	Yes	Yes	Yes	NA	NA	NA	NA
31e	Wood	Other	100-250	179	Wet Scrubber	29	No	Yes	Yes	NA	254,404	345,989	288,158
32a	Wood	Other	>250	449	No Control	2	No	Yes	Yes	NA	348,832	725,006	544,212
32b	Wood	Other	>250	449	Cyclone	3	No	Yes	Yes	NA	348,828	508,329	487,312
32c	Wood	Other	>250	449	ESP	14	Yes	Yes	Yes	NA	NA	NA	NA
32d	Wood	Other	>250	449	Wet Scrubber	5	No	Yes	Yes	NA	348,829	619,189	508,656
33a	Wood	Wall-fired/PC	0-10	7	No Control	10	NA	NA	NA	NA	NA	NA	NA
33b	Wood	Wall-fired/PC	0-10	7	Cyclone	5	NA	NA	NA	NA	NA	NA	NA
34a	Wood	Wall-fired/PC	10-100	26	No Control	2	No	Yes	Yes	NA	192,658	100,508	97,285
34b	Wood	Wall-fired/PC	10-100	26	Cyclone	28	No	Yes	Yes	NA	192,658	71,066	93,993
34c	Wood	Wall-fired/PC	10-100	26	FF	1	Yes	Yes	Yes	NA	NA	NA	NA
34d	Wood	Wall-fired/PC	10-100	26	Wet Scrubber	1	No	Yes	Yes	NA	192,658	86,656	95,227
35a	Wood	Wall-fired/PC	>250	677	ESP	1	Yes	Yes	Yes	NA	NA	NA	NA
35b	Wood	Wall-fired/PC	>250	677	ESP/Wet Scrubber	1	Yes	Yes	Yes	NA	NA	NA	NA
36a	Wood/Other Biomass/NFF Liquid/NFF Solid	All	0-10	7	No Control	3	NA	NA	NA	NA	NA	NA	NA
36b	Wood/Other Biomass/NFF Liquid/NFF Solid	All	0-10	7	Cyclone	2	NA	NA	NA	NA	NA	NA	NA
36c	Wood/Other Biomass/NFF Liquid/NFF Solid	All	0-10	7	ESP	1	NA	NA	NA	NA	NA	NA	NA
36e	Wood/Other Biomass/NFF Liquid/NFF Solid	All	0-10	7	Wet Scrubber	5	NA	NA	NA	NA	NA	NA	NA
37a	Wood/Other Biomass/NFF Liquid/NFF Solid	All	10-100	44	No Control	3	No	Yes	Yes	NA	201,278	133,172	111,200
37b	Wood/Other Biomass/NFF Liquid/NFF Solid	All	10-100	44	Cyclone	12	No	Yes	Yes	NA	201,277	89,353	106,560
37c	Wood/Other Biomass/NFF Liquid/NFF Solid	All	10-100	44	Cyclone/Packed scrubber	1	No	Yes	Yes	NA	201,277	89,353	106,560
37d	Wood/Other Biomass/NFF Liquid/NFF Solid	All	10-100	44	ESP	3	Yes	Yes	Yes	NA	NA	NA	NA
37e	Wood/Other Biomass/NFF Liquid/NFF Solid	All	10-100	44	FF	7	Yes	Yes	Yes	NA	NA	NA	NA
37f	Wood/Other Biomass/NFF Liquid/NFF Solid	All	10-100	44	Wet Scrubber	6	No	Yes	Yes	NA	201,277	110,620	108,337
38a	Wood/Other Biomass/NFF Liquid/NFF Solid	All	100-250	173	Cyclone	1	No	Yes	Yes	NA	251,734	261,357	272,193
38b	Wood/Other Biomass/NFF Liquid/NFF Solid	All	100-250	173	Cyclone/Packed scrubber	1	No	Yes	Yes	NA	251,734	261,357	272,193
38c	Wood/Other Biomass/NFF Liquid/NFF Solid	All	100-250	173	ESP	15	Yes	Yes	Yes	NA	NA	NA	NA
38d	Wood/Other Biomass/NFF Liquid/NFF Solid	All	100-250	173	FF	4	Yes	Yes	Yes	NA	NA	NA	NA
38e	Wood/Other Biomass/NFF Liquid/NFF Solid	All	100-250	173	FF/FSI	1	Yes	Yes	Yes	NA	NA	NA	NA
38f	Wood/Other Biomass/NFF Liquid/NFF Solid	All	100-250	173	FF/Wet Scrubber	1	Yes	Yes	Yes	NA	NA	NA	NA
38g	Wood/Other Biomass/NFF Liquid/NFF Solid	All	100-250	173	Wet Scrubber	15	No	Yes	Yes	NA	251,734	314,864	279,166
39a	Wood/Other Biomass/NFF Liquid/NFF Solid	All	>250	513	No Control	1	No	Yes	Yes	NA	377,986	767,482	591,964
39b	Wood/Other Biomass/NFF Liquid/NFF Solid	All	>250	513	Cyclone	4	No	Yes	Yes	NA	377,982	519,884	537,937
39c	Wood/Other Biomass/NFF Liquid/NFF Solid	All	>250	513	ESP	26	Yes	Yes	Yes	NA	NA	NA	NA
39e	Wood/Other Biomass/NFF Liquid/NFF Solid	All	>250	513	ESP/Wet Scrubber	1	Yes	Yes	Yes	NA	NA	NA	NA
39f	Wood/Other Biomass/NFF Liquid/NFF Solid	All	>250	513	FF	1	Yes	Yes	Yes	NA	NA	NA	NA
39g	Wood/Other Biomass/NFF Liquid/NFF Solid	All	>250	513	Wet Scrubber	33	No	Yes	Yes	NA	377,984	634,308	558,621
40a	Residual Liquid FF	All	0-10	3	No Control	540	NA	NA	NA	NA	NA	NA	NA
40b	Residual Liquid FF	All	0-10	3	Cyclone	3	NA	NA	NA	NA	NA	NA	NA
40d	Residual Liquid FF	All	0-10	3	FF	9	NA	NA	NA	NA	NA	NA	NA
41a	Residual Liquid FF	All	10-100	37	No Control	1,556	NA	NA	NA	NA	NA	NA	NA
41b	Residual Liquid FF	All	10-100	37	Cyclone	44	NA	NA	NA	NA	NA	NA	NA
41c	Residual Liquid FF	All	10-100	37	ESP	4	NA	NA	NA	NA	NA	NA	NA
41d	Residual Liquid FF	All	10-100	37	FF	34	NA	NA	NA	NA	NA	NA	NA
41g	Residual Liquid FF	All	10-100	37	Wet Scrubber	32	NA	NA	NA	NA	NA	NA	NA
42a	Residual Liquid FF	All	100-250	172	No Control	245	NA	NA	NA	NA	NA	NA	NA
42b	Residual Liquid FF	All	100-250	172	Cyclone	53	NA	NA	NA	NA	NA	NA	NA
42c	Residual Liquid FF	All	100-250	172	ESP	14	NA	NA	NA	NA	NA	NA	NA
42d	Residual Liquid FF	All	100-250	172	FF	2	NA	NA	NA	NA	NA	NA	NA
42e	Residual Liquid FF	All	100-250	172	Packed scrubber	2	NA	NA	NA	NA	NA	NA	NA
42f	Residual Liquid FF	All	100-250	172	Wet Scrubber	14	NA	NA	NA	NA	NA	NA	NA

Appendix A-5. Least Cost Control (\$/yr, Annualized Based) per Model to Meet MACT Floor for Existing Sources ¹

Model No	Material	Combustor Type	Capacity Range (MMBtu/hr)	Avg Capacity (MMBtu/hr)	Baseline Control Level	No of Units	meets PM limit?	meets HCl limit?	meets Hg limit?	Packed Scrubber	Venturi Scrubber	ESP	FF
43a	Residual Liquid FF	All	>250	547	No Control	142	NA	NA	NA	NA	NA	NA	NA
43b	Residual Liquid FF	All	>250	547	Cyclone	11	NA	NA	NA	NA	NA	NA	NA
43d	Residual Liquid FF	All	>250	547	ESP	5	NA	NA	NA	NA	NA	NA	NA
44a	Bagasse/Other	All	10-100	72	Cyclone	9	NA	Yes	Yes	NA	NA	NA	NA
44b	Bagasse/Other	All	10-100	72	Wet Scrubber	27	NA	Yes	Yes	NA	NA	NA	NA
45a	Bagasse/Other	All	100-250	158	No Control	2	NA	Yes	Yes	NA	NA	NA	NA
45b	Bagasse/Other	All	100-250	158	Cyclone	13	NA	Yes	Yes	NA	NA	NA	NA
45c	Bagasse/Other	All	100-250	158	Wet Scrubber	21	NA	Yes	Yes	NA	NA	NA	NA
46a	Bagasse/Other	All	>250	419	ESP	2	NA	Yes	Yes	NA	NA	NA	NA
46b	Bagasse/Other	All	>250	419	ESP/Activated Carbon Adsorption	8	NA	Yes	Yes	NA	NA	NA	NA
46c	Bagasse/Other	All	>250	419	Wet Scrubber	50	NA	Yes	Yes	NA	NA	NA	NA
47a	Coal	Other	0-10	4	No Control	36	No	NA	NA	NA	182,549	33,526	79,220
48a	Coal	Other	10-100	54	No Control	10	No	NA	NA	NA	209,396	142,793	127,865
48b	Coal	Other	10-100	54	Cyclone	54	No	NA	NA	NA	209,395	84,686	118,195
48c	Coal	Other	10-100	54	ESP	3	Yes	NA	NA	NA	NA	NA	NA
48d	Coal	Other	10-100	54	FF	3	Yes	NA	NA	NA	NA	NA	NA
49b	Coal	Other	100-250	166	Cyclone	26	No	NA	NA	NA	263,218	183,180	287,047
49c	Coal	Other	100-250	166	ESP	3	Yes	NA	NA	NA	NA	NA	NA
50c	Coal	Other	>250	565	ESP	5	Yes	NA	NA	NA	NA	NA	NA
50f	Coal	Other	>250	565	FF	2	Yes	NA	NA	NA	NA	NA	NA
52a	Coal	Wall-fired/PC	10-100	57	No Control	9	No	NA	NA	NA	210,933	148,358	131,037
52b	Coal	Wall-fired/PC	10-100	57	Cyclone	18	No	NA	NA	NA	210,932	87,846	120,819
52f	Coal	Wall-fired/PC	10-100	57	Wet Scrubber	5	No	NA	NA	NA	210,933	117,205	124,549
53b	Coal	Wall-fired/PC	100-250	186	Cyclone	6	No	NA	NA	NA	274,164	206,020	318,409
53d	Coal	Wall-fired/PC	100-250	186	ESP	3	Yes	NA	NA	NA	NA	NA	NA
54c	Coal	Wall-fired/PC	>250	600	ESP	15	Yes	NA	NA	NA	NA	NA	NA
55b	Coal/Wood/NFF Liquid/NFF Solid	All	0-10	6	Cyclone	1	No	NA	NA	NA	182,953	20,241	79,171
56b	Coal/Wood/NFF Liquid/NFF Solid	All	10-100	35	Cyclone	2	No	NA	NA	NA	197,848	48,023	100,769
57d	Coal/Wood/NFF Liquid/NFF Solid	All	100-250	173	FF	1	Yes	NA	NA	NA	NA	NA	NA
58a	Gas	Other	0-10	3	No Control	1,938	NA	NA	NA	NA	NA	NA	NA
58d	Gas	Other	0-10	3	FF	35	NA	NA	NA	NA	NA	NA	NA
58h	Gas	Other	0-10	3	Wet Scrubber	16	NA	NA	NA	NA	NA	NA	NA
59a	Gas	Other	10-100	33	No Control	781	NA	NA	NA	NA	NA	NA	NA
59b	Gas	Other	10-100	33	Cyclone	16	NA	NA	NA	NA	NA	NA	NA
59d	Gas	Other	10-100	33	FF	13	NA	NA	NA	NA	NA	NA	NA
59e	Gas	Other	10-100	33	FF/Wet Scrubber	7	NA	NA	NA	NA	NA	NA	NA
59f	Gas	Other	10-100	33	Wet Scrubber	2	NA	NA	NA	NA	NA	NA	NA
60a	Gas	Other	100-250	164	No Control	86	NA	NA	NA	NA	NA	NA	NA
60b	Gas	Other	100-250	164	Cyclone	2	NA	NA	NA	NA	NA	NA	NA
60e	Gas	Other	100-250	164	FF	2	NA	NA	NA	NA	NA	NA	NA
61a	Gas	Other	>250	520	No Control	40	NA	NA	NA	NA	NA	NA	NA
62a	Gas/Wood/Other Biomass/Liquid FF	All	0-10	6	No Control	1	No	NA	NA	NA	183,043	26,316	79,652
62b	Gas/Wood/Other Biomass/Liquid FF	All	0-10	6	Cyclone	1	Yes	NA	NA	NA	NA	NA	NA
63a	Gas/Wood/Other Biomass/Liquid FF	All	10-100	45	No Control	2	No	NA	NA	NA	201,521	75,083	108,977
63b	Gas/Wood/Other Biomass/Liquid FF	All	10-100	45	Cyclone	1	Yes	NA	NA	NA	NA	NA	NA
64d	Gas/Wood/Other Biomass/Liquid FF	All	100-250	178	ESP	1	Yes	NA	NA	NA	NA	NA	NA
64e	Gas/Wood/Other Biomass/Liquid FF	All	100-250	178	ESP/Wet Scrubber	1	Yes	NA	NA	NA	NA	NA	NA
65e	Gas/Wood/Other Biomass/Liquid FF	All	>250	394	Wet Scrubber	1	No	NA	NA	NA	326,181	194,486	436,835
66a	Distillate Liquid FF	All	0-10	3	No Control	428	NA	NA	NA	NA	NA	NA	NA
67a	Distillate Liquid FF	All	10-100	29	No Control	215	NA	NA	NA	NA	NA	NA	NA
67d	Distillate Liquid FF	All	10-100	29	FF	3	NA	NA	NA	NA	NA	NA	NA
68a	Distillate Liquid FF	All	100-250	157	No Control	43	NA	NA	NA	NA	NA	NA	NA
69a	Distillate Liquid FF	All	>250	355	No Control	11	NA	NA	NA	NA	NA	NA	NA
69d	Distillate Liquid FF	All	>250	355	ESP	3	NA	NA	NA	NA	NA	NA	NA

Appendix A-5. Least Cost Control (\$/yr, Annualized Based) per Model to Meet MACT Floor for Existing Sources ¹

Model No	Material	Combustor Type	Capacity Range (MMBtu/hr)	Avg Capacity (MMBtu/hr)	Baseline Control Level	No of Units	meets PM limit?	meets HCl limit?	meets Hg limit?	Packed Scrubber	Venturi Scrubber	ESP	FF
70b	NFF Liquid/NFF Solid/Gas	All	10-100	58	Cyclone	4	No	NA	NA	NA	208,095	88,396	117,659
72b	NFF Liquid/NFF Solid/Gas	All	>250	562	ESP	1	Yes	NA	NA	NA	NA	NA	NA
73a	Wood	Other	0-10	5	No Control	6	No	NA	NA	NA	182,707	32,915	79,587
73b	Wood	Other	0-10	5	Cyclone	8	No	NA	NA	NA	182,707	19,682	78,940
74a	Wood	Other	10-100	30	No Control	4	No	NA	NA	NA	194,565	84,097	100,697
74b	Wood	Other	10-100	30	Cyclone	2	No	NA	NA	NA	194,565	43,252	96,897
74e	Wood	Other	10-100	30	Wet Scrubber	2	No	NA	NA	NA	194,565	64,804	98,323
75e	Wood	Other	100-250	179	Wet Scrubber	1	No	NA	NA	NA	254,404	203,398	288,158
76b	Wood	Wall-fired/PC	0-10	7	Cyclone	3	No	NA	NA	NA	183,476	21,659	80,109
77b	Wood	Wall-fired/PC	10-100	26	Cyclone	2	No	NA	NA	NA	192,658	40,049	93,993
78a	Wood/Other Biomass/NFF Liquid/NFF Solid	All	0-10	7	No Control	2	No	NA	NA	NA	183,580	34,786	80,903
79b	Wood/Other Biomass/NFF Liquid/NFF Solid	All	10-100	44	Cyclone	3	No	NA	NA	NA	201,277	41,273	106,560
79d	Wood/Other Biomass/NFF Liquid/NFF Solid	All	10-100	44	ESP	1	Yes	NA	NA	NA	NA	NA	NA
80a	Residual Liquid FF	All	0-10	3	No Control	167	NA	NA	NA	NA	NA	NA	NA
81a	Residual Liquid FF	All	10-100	37	No Control	318	NA	NA	NA	NA	NA	NA	NA
81g	Residual Liquid FF	All	10-100	37	Wet Scrubber	9	NA	NA	NA	NA	NA	NA	NA
82a	Residual Liquid FF	All	100-250	172	No Control	63	NA	NA	NA	NA	NA	NA	NA
83a	Residual Liquid FF	All	>250	547	No Control	7	NA	NA	NA	NA	NA	NA	NA
Total						58,200							

¹ Bolded selections indicate the least cost option chosen.

Appendix A-6. Controls and Costs to Meet MACT Floor per Model for New Sources

Model No	Material	Combustor Type	Capacity Range (MMBtu/hr)	Average Capacity (MMBtu/hr)	Baseline Control Level	No of Units	MACT Floor Add-on Controls					MACT Floor GCP Costs		
							HCl Floor Control	PM Floor Control	Hg Floor Control	Total Capital Costs for Add-On Controls on Models (\$)	Total Annual Costs for Add-On Controls on Model (\$/yr) ¹	CO Floor Control	Total Capital Costs for CO Monitoring (\$)	Total Annual Costs for CO Monitoring (\$/yr)
1	Coal	Other	0-10	4	No Control	4	Wet Scrub	Fabric Filter	Fabric Filter	138,489	145,635	None	0	0
2	Coal	Other	10-100	54	FF/Pack Scrub	44	None	None	None	0	0	CO monitor	37,800	7,840
3	Coal	Other	100-250	166	FF/Pack Scrub	24	None	None	None	0	0	CO monitor	37,800	7,840
4	Coal	Other	>250	565	FF/Pack Scrub	10	None	None	None	0	0	CO monitor	37,800	7,840
5	Coal	Wall-fired/PC	0-10	2	No Control	1	Wet Scrub	Fabric Filter	Fabric Filter	111,387	139,390	None	0	0
6	Coal	Wall-fired/PC	10-100	57	FF/Pack Scrub	5	None	None	None	0	0	CO monitor	37,800	7,840
7	Coal	Wall-fired/PC	100-250	186	FF/Pack Scrub	10	None	None	None	0	0	CO monitor	37,800	7,840
8	Coal	Wall-fired/PC	>250	600	FF/Pack Scrub	14	None	None	None	0	0	CO monitor	37,800	7,840
9	Coal/Wood/NFF	All	0-10	6	No Control	1	None	Fabric Filter	None	61,404	79,924	None	0	0
10	Coal/Wood/NFF	All	10-100	35	FF/Pack Scrub	5	None	None	None	0	0	CO monitor	37,800	7,840
11	Coal/Wood/NFF	All	100-250	173	FF/Pack Scrub	1	None	None	None	0	0	CO monitor	37,800	7,840
12	Coal/Wood/NFF	All	>250	565	FF/Pack Scrub	5	None	None	None	0	0	CO monitor	37,800	7,840
13	Gas	All	0-10	3	No Control	2,019	None	None	None	0	0	None	0	0
14	Gas	All	10-100	33	No Control	1,051	None	None	None	0	0	CO monitor	37,800	7,840
15	Gas	All	100-250	164	No Control	119	None	None	None	0	0	CO monitor	37,800	7,840
16	Gas	All	>250	520	No Control	52	None	None	None	0	0	CO monitor	37,800	7,840
17	Gas/Wood/Other Biomass/Liquid FF	All	0-10	6	No Control	2	None	Fabric Filter	None	61,691	79,652	None	0	0
18	Gas/Wood/Other Biomass/Liquid FF	All	10-100	45	FF	8	None	None	None	0	0	CO monitor	37,800	7,840
19	Gas/Wood/Other Biomass/Liquid FF	All	100-250	178	FF	3	None	None	None	0	0	CO monitor	37,800	7,840
20	Gas/Wood/Other Biomass/Liquid FF	All	>250	394	FF	4	None	None	None	0	0	CO monitor	37,800	7,840
21	Distillate Liquid FF	All	0-10	3	No Control	164	None	None	None	0	0	None	0	0
22	Distillate Liquid FF	All	10-100	29	No Control	71	None	None	None	0	0	CO monitor	37,800	7,840
23	Distillate Liquid FF	All	100-250	157	No Control	9	None	None	None	0	0	CO monitor	37,800	7,840
24	Distillate Liquid FF	All	>250	355	No Control	10	None	None	None	0	0	CO monitor	37,800	7,840
25	NFF Liquid/NFF Solid/Gas	All	0-10	6	No Control	0	None	Fabric Filter	Fabric Filter	62,541	80,736	None	0	0
26	NFF Liquid/NFF Solid/Gas	All	10-100	58	FF	1	Pack Scrub	None	None	402,953	135,799	CO monitor	37,800	7,840
27	NFF Liquid/NFF Solid/Gas	All	100-250	161	FF	1	Pack Scrub	None	None	926,892	252,747	CO monitor	37,800	7,840
28	NFF Liquid/NFF Solid/Gas	All	>250	562	FF	1	Pack Scrub	None	None	3,512,616	2,083,492	CO monitor	37,800	7,840
29	Wood	Other	0-10	5	No Control	15	None	Fabric Filter	None	60,578	79,587	None	0	0
30	Wood	Other	10-100	30	FF	38	None	None	None	0	0	CO monitor	37,800	7,840
31	Wood	Other	100-250	179	FF	6	None	None	None	0	0	CO monitor	37,800	7,840
32	Wood	Other	>250	449	FF	2	None	None	None	0	0	CO monitor	37,800	7,840
33	Wood	Wall-fired/PC	0-10	7	No Control	1	None	Fabric Filter	None	64,932	80,993	None	0	0
34	Wood	Wall-fired/PC	10-100	26	FF	3	None	None	None	0	0	CO monitor	37,800	7,840
35	Wood	Wall-fired/PC	>250	677	FF	0	None	None	None	0	0	CO monitor	37,800	7,840
36	Wood/Other Biomass/NFF	All	0-10	7	No Control	1	None	Fabric Filter	Fabric Filter	65,206	80,903	None	0	0
37	Wood/Other Biomass/NFF	All	10-100	44	FF	3	None	None	None	0	0	CO monitor	37,800	7,840
38	Wood/Other Biomass/NFF	All	100-250	173	FF	3	None	None	None	0	0	CO monitor	37,800	7,840
39	Wood/Other Biomass/NFF	All	>250	513	FF	5	None	None	None	0	0	CO monitor	37,800	7,840
40	Residual Liquid FF	All	0-10	3	No Control	0	None	Fabric Filter	None	51,327	76,531	None	0	0
41	Residual Liquid FF	All	10-100	37	Pack Scrub	0	None	Fabric Filter	None	112,482	93,545	CO monitor	37,800	7,840
42	Residual Liquid FF	All	100-250	172	Pack Scrub	0	None	Fabric Filter	None	374,947	232,502	CO monitor	37,800	7,840
43	Residual Liquid FF	All	>250	547	Pack Scrub	0	None	Fabric Filter	None	1,175,167	427,375	CO monitor	37,800	7,840
44	Bagasse/Other	All	10-100	72	FF	4	None	None	None	0	0	CO monitor	37,800	7,840
45	Bagasse/Other	All	100-250	158	FF	4	None	None	None	0	0	CO monitor	37,800	7,840
46	Bagasse/Other	All	>250	419	FF	7	None	None	None	0	0	CO monitor	37,800	7,840
47	Coal	Other	0-10	4	No Control	2	Wet Scrub	Fabric Filter	Fabric Filter	138,489	145,635	CO monitor	37,800	7,840

Appendix A-6. Controls and Costs to Meet MACT Floor per Model for New Sources

Model No	Material	Combustor Type	Capacity Range (MMBtu/hr)	Average Capacity (MMBtu/hr)	Baseline Control Level	No of Units	MACT Floor Add-on Controls					MACT Floor GCP Costs		
							HCl Floor Control	PM Floor Control	Hg Floor Control	Total Capital Costs for Add-On Controls on Models (\$)	Total Annual Costs for Add-On Controls on Model (\$/yr) ¹	CO Floor Control	Total Capital Costs for CO Monitoring (\$)	Total Annual Costs for CO Monitoring (\$/yr)
48	Coal	Other	10-100	54	FF/Pack Scrub	3	None	None	None	0	0	CO monitor	37,800	7,840
49	Coal	Other	100-250	466	FF/Pack Scrub	1	None	None	None	0	0	CO monitor	37,800	7,840
50	Coal	Other	>250	565	FF/Pack Scrub	0	None	None	None	0	0	CO monitor	37,800	7,840
52	Coal	Wall-fired/PC	10-100	57	FF/Pack Scrub	2	None	None	None	0	0	CO monitor	37,800	7,840
53	Coal	Wall-fired/PC	100-250	186	FF/Pack Scrub	0	None	None	None	0	0	CO monitor	37,800	7,840
54	Coal	Wall-fired/PC	>250	600	FF/Pack Scrub	1	None	None	None	0	0	CO monitor	37,800	7,840
55	Coal/Wood/NFF	All	0-10	6	No Control	0	None	Fabric Filter	None	61,404	79,924	CO monitor	37,800	7,840
56	Coal/Wood/NFF	All	10-100	35	FF/Pack Scrub	0	None	None	None	0	0	CO monitor	37,800	7,840
57	Coal/Wood/NFF	All	100-250	173	FF/Pack Scrub	0	None	None	None	0	0	CO monitor	37,800	7,840
58	Gas	Other	0-10	3	No Control	151	None	None	None	0	0	CO monitor	37,800	7,840
59	Gas	Other	10-100	33	No Control	61	None	None	None	0	0	CO monitor	37,800	7,840
60	Gas	Other	100-250	164	No Control	7	None	None	None	0	0	CO monitor	37,800	7,840
61	Gas	Other	>250	520	No Control	3	None	None	None	0	0	CO monitor	37,800	7,840
62	Gas/Wood/Other Biomass/Liquid FF	All	0-10	6	No Control	0	None	Fabric Filter	None	61,691	79,652	CO monitor	37,800	7,840
63	Gas/Wood/Other Biomass/Liquid FF	All	10-100	45	FF	0	None	None	None	0	0	CO monitor	37,800	7,840
64	Gas/Wood/Other Biomass/Liquid FF	All	100-250	178	FF	0	None	None	None	0	0	CO monitor	37,800	7,840
65	Gas/Wood/Other Biomass/Liquid FF	All	>250	394	FF	0	None	None	None	0	0	CO monitor	37,800	7,840
66	Distillate Liquid FF	All	0-10	3	No Control	31	None	None	None	0	0	CO monitor	37,800	7,840
67	Distillate Liquid FF	All	10-100	29	No Control	16	None	None	None	0	0	CO monitor	37,800	7,840
68	Distillate Liquid FF	All	100-250	157	No Control	3	None	None	None	0	0	CO monitor	37,800	7,840
69	Distillate Liquid FF	All	>250	355	No Control	1	None	None	None	0	0	CO monitor	37,800	7,840
70	NFF Liquid/NFF Solid/Gas	All	10-100	58	FF	0	None	None	None	0	0	CO monitor	37,800	7,840
72	NFF Liquid/NFF Solid/Gas	All	>250	562	FF	0	None	None	None	0	0	CO monitor	37,800	7,840
73	Wood	Other	0-10	5	No Control	1	None	Fabric Filter	None	60,578	79,587	CO monitor	37,800	7,840
74	Wood	Other	10-100	30	FF	1	None	None	None	0	0	CO monitor	37,800	7,840
75	Wood	Other	100-250	179	FF	0	None	None	None	0	0	CO monitor	37,800	7,840
76	Wood	Wall-fired/PC	0-10	7	No Control	0	None	Fabric Filter	None	64,932	80,993	CO monitor	37,800	7,840
77	Wood	Wall-fired/PC	10-100	26	FF	0	None	None	None	0	0	CO monitor	37,800	7,840
78	Wood/Other Biomass/NFF	All	0-10	7	No Control	0	None	Fabric Filter	Fabric Filter	65,206	80,903	CO monitor	37,800	7,840
79	Wood/Other Biomass/NFF	All	10-100	44	FF	0	None	None	None	0	0	CO monitor	37,800	7,840
80	Residual Liquid FF	All	0-10	3	No Control	0	None	Fabric Filter	None	51,328	76,531	CO monitor	37,800	7,840
81	Residual Liquid FF	All	10-100	37	Pack Scrub	0	None	Fabric Filter	None	112,481	93,545	CO monitor	37,800	7,840
82	Residual Liquid FF	All	100-250	172	Pack Scrub	0	None	Fabric Filter	None	374,949	232,502	CO monitor	37,800	7,840
83	Residual Liquid FF	All	>250	547	Pack Scrub	0	None	Fabric Filter	None	1,175,164	427,374	CO monitor	37,800	7,840
Total						4,015								

1 Costs include annualized cost, and operating and maintance costs.

Appendix A-7a. Testing and Monitoring Costs per Model for Existing Sources - Total Capital Investment

Model No	Testing TCI (\$)					Monitoring TCI (\$)			
	PM	Metals	HCl	Hg	Total	PM	HCl	Hg	Total
1a					0				0
1b					0				0
1c					0				0
2a	8,000		5,000	8,000	21,000		40,183		40,183
2b	8,000		5,000	8,000	21,000		40,183		40,183
2c	8,000		5,000	8,000	21,000		40,183		40,183
2d	8,000		5,000	8,000	21,000		40,183		40,183
2e	8,000		5,000	8,000	21,000		15,546		15,546
2f	8,000		5,000	8,000	21,000		15,546		15,546
2g	8,000		5,000	8,000	21,000		40,183		40,183
3a	8,000		5,000	8,000	21,000		40,183		40,183
3b	8,000		5,000	8,000	21,000		40,183		40,183
3c	8,000		5,000	8,000	21,000		40,183		40,183
3d	8,000		5,000	8,000	21,000		40,183		40,183
3e	8,000		5,000	8,000	21,000		40,183		40,183
3f	8,000		5,000	8,000	21,000		15,546		15,546
3g	8,000		5,000	8,000	21,000		40,183		40,183
3h	8,000		5,000	8,000	21,000		40,183		40,183
4a	8,000		5,000	41,769	54,769		40,183		40,183
4b	8,000		5,000	41,769	54,769		40,183		40,183
4c	8,000		5,000	41,769	54,769		40,183		40,183
4d	8,000		5,000	41,769	54,769			40,183	40,183
4e	8,000		5,000	41,769	54,769		40,183		40,183
4f	8,000		5,000	41,769	54,769		40,183		40,183
4g	8,000		5,000	41,769	54,769		15,546		15,546
4h	8,000		5,000	41,769	54,769		15,546		15,546
4i	8,000		5,000	41,769	54,769		15,546		15,546
4j	8,000		5,000	41,769	54,769		40,183		40,183
5a					0				0
5b					0				0
6a	8,000		5,000	8,000	21,000		40,183		40,183
6b	8,000		5,000	8,000	21,000		40,183		40,183
6c	8,000		5,000	8,000	21,000		40,183		40,183
6d	8,000		5,000	8,000	21,000		40,183		40,183
6e	8,000		5,000	8,000	21,000		15,546		15,546
6f	8,000		5,000	8,000	21,000		40,183		40,183
7a	8,000		5,000	8,000	21,000		40,183		40,183
7b	8,000		5,000	8,000	21,000		40,183		40,183
7c	8,000		5,000	8,000	21,000		40,183		40,183
7d	8,000		5,000	8,000	21,000		40,183		40,183
7e	8,000		5,000	8,000	21,000		40,183		40,183
7f	8,000		5,000	8,000	21,000		15,546		15,546
7g	8,000		5,000	8,000	21,000		40,183		40,183
7h	8,000		5,000	8,000	21,000		40,183		40,183
8a	8,000		5,000	41,769	54,769		40,183		40,183
8c	8,000		5,000	41,769	54,769		40,183		40,183
8d	8,000		5,000	41,769	54,769			40,183	40,183
8e	8,000		5,000	41,769	54,769		40,183		40,183
8f	8,000		5,000	41,769	54,769		40,183		40,183
8g	8,000		5,000	41,769	54,769		40,183		40,183
8h	8,000		5,000	41,769	54,769		15,546		15,546
8i	8,000		5,000	41,769	54,769		15,546		15,546
8j	8,000		5,000	41,769	54,769		40,183		40,183
8k	8,000		5,000	41,769	54,769		40,183		40,183
9a					0				0
9b					0				0
10a	8,000		5,000	8,000	21,000	29,200	720	200	30,120
10b	8,000		5,000	8,000	21,000	29,200	720	200	30,120
10c	8,000		5,000	8,000	21,000		720	200	920
11a	8,000		5,000	8,000	21,000	40,183	720	200	41,103
11b	8,000		5,000	8,000	21,000		720	200	920
11c	8,000		5,000	8,000	21,000		40,183		40,183
11d	8,000		5,000	8,000	21,000		720	200	920
12a	8,000		5,000	41,769	54,769	40,183	720	200	41,103
12b	8,000		5,000	41,769	54,769		40,183		40,183
12c	8,000		5,000	41,769	54,769		720	200	920
12d	8,000		5,000	41,769	54,769		15,546		15,546
12e	8,000		5,000	41,769	54,769		15,546		15,546
12f	8,000		5,000	41,769	54,769		720	200	920
12g	8,000		5,000	41,769	54,769		15,546		15,546
12h	8,000		5,000	41,769	54,769		40,183		40,183
12i	8,000		5,000	41,769	54,769		40,183		40,183
13a					0				0
13b					0				0
13c					0				0
13d					0				0
13e					0				0

Appendix A-7a. Testing and Monitoring Costs per Model for Existing Sources - Total Capital Investment

Model No	Testing TCI (\$)					Monitoring TCI (\$)			
	PM	Metals	HCl	Hg	Total	PM	HCl	Hg	Total
13f					0				0
13g					0				0
13h					0				0
14a					0				0
14b					0				0
14c					0				0
14d					0				0
14e					0				0
14f					0				0
15a					0				0
15b					0				0
15c					0				0
15d					0				0
15e					0				0
15f					0				0
16a					0				0
16b					0				0
16c					0				0
16d					0				0
17a					0				0
17b					0				0
17c					0				0
17d					0				0
18a	8,000		5,000	8,000	21,000	29,200	720	200	30,120
18b	8,000		5,000	8,000	21,000	29,200	720	200	30,120
18c	8,000		5,000	8,000	21,000		720	200	920
18d	8,000		5,000	8,000	21,000		40,183		40,183
18e	8,000		5,000	8,000	21,000		720	200	920
18f	8,000		5,000	8,000	21,000		40,183		40,183
18g	8,000		5,000	8,000	21,000		40,183		40,183
19b	8,000		5,000	8,000	21,000	29,200	720	200	30,120
19c	8,000		5,000	8,000	21,000		40,183		40,183
19d	8,000		5,000	8,000	21,000		720	200	920
19e	8,000		5,000	8,000	21,000		40,183		40,183
19f	8,000		5,000	8,000	21,000		40,183		40,183
20a	8,000		5,000	41,769	54,769	29,200	720	200	30,120
20b	8,000		5,000	41,769	54,769		720	200	920
20c	8,000		5,000	41,769	54,769		40,183		40,183
20d	8,000		5,000	41,769	54,769		720	200	920
20e	8,000		5,000	41,769	54,769		40,183		40,183
21a					0				0
21b					0				0
21d					0				0
21e					0				0
22a					0				0
22b					0				0
22c					0				0
22d					0				0
22g					0				0
23a					0				0
23b					0				0
23d					0				0
23f					0				0
24a					0				0
24d					0				0
25a					0				0
25b					0				0
26a	8,000		5,000	8,000	21,000			40,183	40,183
26b	8,000		5,000	8,000	21,000			40,183	40,183
26c	8,000		5,000	8,000	21,000			40,183	40,183
26d	8,000		5,000	8,000	21,000		720	200	920
26e	8,000		5,000	8,000	21,000		15,546		15,546
26f	8,000		5,000	8,000	21,000		40,183		40,183
27a	8,000		5,000	8,000	21,000	40,183			40,183
27b	8,000		5,000	8,000	21,000			40,183	40,183
27c	8,000		5,000	8,000	21,000		40,183		40,183
27d	8,000		5,000	8,000	21,000		720	200	920
27e	8,000		5,000	8,000	21,000	40,183			40,183
27f	8,000		5,000	8,000	21,000		40,183		40,183
28a	8,000		5,000	41,769	54,769	40,183			40,183
28b	8,000		5,000	41,769	54,769			40,183	40,183
28c	8,000		5,000	41,769	54,769		40,183		40,183
29a					0				0
29b					0				0
29c					0				0
30a	8,000		5,000	8,000	21,000	29,200	720	200	30,120
30b	8,000		5,000	8,000	21,000	29,200	720	200	30,120

Appendix A-7a. Testing and Monitoring Costs per Model for Existing Sources - Total Capital Investment

Model No	Testing TCI (\$)					Monitoring TCI (\$)			
	PM	Metals	HCl	Hg	Total	PM	HCl	Hg	Total
30c	8,000		5,000	8,000	21,000		720	200	920
30d	8,000		5,000	8,000	21,000		720	200	920
30e	8,000		5,000	8,000	21,000		40,183		40,183
31a	8,000		5,000	8,000	21,000	40,183	720	200	41,103
31b	8,000		5,000	8,000	21,000	40,183	720	200	41,103
31c	8,000		5,000	8,000	21,000		40,183		40,183
31d	8,000		5,000	8,000	21,000		720	200	920
31e	8,000		5,000	8,000	21,000		40,183		40,183
32a	8,000		5,000	41,769	54,769	40,183	720	200	41,103
32b	8,000		5,000	41,769	54,769	40,183	720	200	41,103
32c	8,000		5,000	41,769	54,769		720	200	920
32d	8,000		5,000	41,769	54,769		40,183		40,183
33a					0				0
33b					0				0
34a	8,000		5,000	8,000	21,000	29,200	720	200	30,120
34b	8,000		5,000	8,000	21,000	29,200	720	200	30,120
34c	8,000		5,000	8,000	21,000		720	200	920
34d	8,000		5,000	8,000	21,000		40,183		40,183
35a	8,000		5,000	41,769	54,769		720	200	920
35b	8,000		5,000	41,769	54,769		40,183		40,183
36a					0				0
36b					0				0
36c					0				0
36e					0				0
37a	8,000		5,000	8,000	21,000	29,200	720	200	30,120
37b	8,000		5,000	8,000	21,000	29,200	720	200	30,120
37c	8,000		5,000	8,000	21,000		40,183		40,183
37d	8,000		5,000	8,000	21,000		720	200	920
37e	8,000		5,000	8,000	21,000		720	200	920
37f	8,000		5,000	8,000	21,000		40,183		40,183
38a	8,000		5,000	8,000	21,000	40,183	720	200	41,103
38b	8,000		5,000	8,000	21,000		40,183		40,183
38c	8,000		5,000	8,000	21,000		720	200	920
38d	8,000		5,000	8,000	21,000		720	200	920
38e	8,000		5,000	8,000	21,000		15,546		15,546
38f	8,000		5,000	8,000	21,000		40,183		40,183
38g	8,000		5,000	8,000	21,000		40,183		40,183
39a	8,000		5,000	41,769	54,769	40,183	720	200	41,103
39b	8,000		5,000	41,769	54,769	40,183	720	200	41,103
39c	8,000		5,000	41,769	54,769		720	200	920
39e	8,000		5,000	41,769	54,769		40,183		40,183
39f	8,000		5,000	41,769	54,769		720	200	920
39g	8,000		5,000	41,769	54,769		40,183		40,183
40a					0				0
40b					0				0
40d					0				0
41a					0				0
41b					0				0
41c					0				0
41d					0				0
41g					0				0
42a					0				0
42b					0				0
42c					0				0
42d					0				0
42e					0				0
42f					0				0
43a					0				0
43b					0				0
43d					0				0
44a		8,000	5,000		13,000	1,081	720		1,801
44b		8,000	5,000		13,000	1,081	40,183		41,264
45a		8,000	5,000		13,000	1,081	720		1,801
45b		8,000	5,000		13,000	1,081	720		1,801
45c		8,000	5,000		13,000	1,081	40,183		41,264
46a		8,000	5,000		13,000	1,081	720		1,801
46b		8,000	5,000		13,000	1,081	720		1,801
46c		8,000	5,000		13,000	1,081	40,183		41,264
47a	8,000				8,000	29,200			29,200
48a	8,000				8,000	29,200			29,200
48b	8,000				8,000	29,200			29,200
48c	8,000				8,000				0
48d	8,000				8,000				0
49b	8,000				8,000	29,200			29,200
49c	8,000				8,000				0
50c	8,000				8,000				0
50f	8,000				8,000				0

Appendix A-7a. Testing and Monitoring Costs per Model for Existing Sources - Total Capital Investment

Model No	Testing TCI (\$)					Monitoring TCI (\$)			
	PM	Metals	HCl	Hg	Total	PM	HCl	Hg	Total
52a	8,000				8,000	29,200			29,200
52b	8,000				8,000	29,200			29,200
52f	8,000				8,000	40,183			40,183
53b	8,000				8,000	29,200			29,200
53d	8,000				8,000				0
54c	8,000				8,000				0
55b	8,000				8,000	29,200			29,200
56b	8,000				8,000	29,200			29,200
57d	8,000				8,000				0
58a					0				0
58d					0				0
58h					0				0
59a					0				0
59b					0				0
59d					0				0
59e					0				0
59f					0				0
60a					0				0
60b					0				0
60e					0				0
61a					0				0
62a	8,000				8,000	29,200			29,200
62b	8,000				8,000	29,200			29,200
63a	8,000				8,000	29,200			29,200
63b	8,000				8,000	29,200			29,200
64d	8,000				8,000				0
64e	8,000				8,000	40,183			40,183
65e	8,000				8,000	40,183			40,183
66a					0				0
67a					0				0
67d					0				0
68a					0				0
69a					0				0
69d					0				0
70b	8,000				8,000	29,200			29,200
72b	8,000				8,000				0
73a	8,000				8,000	29,200			29,200
73b	8,000				8,000	29,200			29,200
74a	8,000				8,000	29,200			29,200
74b	8,000				8,000	29,200			29,200
74e	8,000				8,000	40,183			40,183
75e	8,000				8,000	40,183			40,183
76b	8,000				8,000	29,200			29,200
77b	8,000				8,000	29,200			29,200
78a	8,000				8,000	29,200			29,200
79b	8,000				8,000	29,200			29,200
79d	8,000				8,000				0
80a					0				0
81a					0				0
81g					0				0
82a					0				0
83a					0				0

Appendix A-7b. Testing and Monitoring Costs per Model for Existing Sources - Total Annualized Costs

Model No	Testing TAC (\$)					Monitoring TAC (\$)			
	PM	Metals	HCl	Hg	Total	PM	HCl	Hg	Total
1a					0				0
1b					0				0
1c					0				0
2a	8,000		5,000	8,000	21,000		27,700		27,700
2b	8,000		5,000	8,000	21,000		27,700		27,700
2c	8,000		5,000	8,000	21,000		27,700		27,700
2d	8,000		5,000	8,000	21,000		27,700		27,700
2e	8,000		5,000	8,000	21,000		4,680		4,680
2f	8,000		5,000	8,000	21,000		4,680		4,680
2g	8,000		5,000	8,000	21,000		27,700		27,700
3a	8,000		5,000	8,000	21,000		27,700		27,700
3b	8,000		5,000	8,000	21,000		27,700		27,700
3c	8,000		5,000	8,000	21,000		27,700		27,700
3d	8,000		5,000	8,000	21,000		27,700		27,700
3e	8,000		5,000	8,000	21,000		27,700		27,700
3f	8,000		5,000	8,000	21,000		4,680		4,680
3g	8,000		5,000	8,000	21,000		27,700		27,700
3h	8,000		5,000	8,000	21,000		27,700		27,700
4a	8,000		5,000	41,769	54,769		27,700		27,700
4b	8,000		5,000	41,769	54,769		27,700		27,700
4c	8,000		5,000	41,769	54,769		27,700		27,700
4d	8,000		5,000	41,769	54,769			27,700	0
4e	8,000		5,000	41,769	54,769		27,700		27,700
4f	8,000		5,000	41,769	54,769		27,700		27,700
4g	8,000		5,000	41,769	54,769		4,680		4,680
4h	8,000		5,000	41,769	54,769		4,680		4,680
4i	8,000		5,000	41,769	54,769		4,680		4,680
4j	8,000		5,000	41,769	54,769		27,700		27,700
5a					0				0
5b					0				0
6a	8,000		5,000	8,000	21,000		27,700		27,700
6b	8,000		5,000	8,000	21,000		27,700		27,700
6c	8,000		5,000	8,000	21,000		27,700		27,700
6d	8,000		5,000	8,000	21,000		27,700		27,700
6e	8,000		5,000	8,000	21,000		4,680		4,680
6f	8,000		5,000	8,000	21,000		27,700		27,700
7a	8,000		5,000	8,000	21,000		27,700		27,700
7b	8,000		5,000	8,000	21,000		27,700		27,700
7c	8,000		5,000	8,000	21,000		27,700		27,700
7d	8,000		5,000	8,000	21,000		27,700		27,700
7e	8,000		5,000	8,000	21,000		27,700		27,700
7f	8,000		5,000	8,000	21,000		4,680		4,680
7g	8,000		5,000	8,000	21,000		27,700		27,700
7h	8,000		5,000	8,000	21,000		27,700		27,700
8a	8,000		5,000	41,769	54,769		27,700		27,700
8c	8,000		5,000	41,769	54,769		27,700		27,700
8d	8,000		5,000	41,769	54,769			27,700	0
8e	8,000		5,000	41,769	54,769		27,700		27,700
8f	8,000		5,000	41,769	54,769		27,700		27,700
8g	8,000		5,000	41,769	54,769		27,700		27,700
8h	8,000		5,000	41,769	54,769		4,680		4,680
8i	8,000		5,000	41,769	54,769		4,680		4,680
8j	8,000		5,000	41,769	54,769		27,700		27,700
8k	8,000		5,000	41,769	54,769		27,700		27,700
9a					0				0
9b					0				0
10a	8,000		0	0	8,000	9,924	776	200	10,700
10b	8,000		0	0	8,000	9,924	776	200	10,700
10c	8,000		0	0	8,000		776	200	776
11a	8,000		0	0	8,000	27,700	776	200	28,476
11b	8,000		0	0	8,000		776	200	776
11c	8,000		5,000	8,000	21,000		27,700		27,700
11d	8,000		0	0	8,000		776	200	776
12a	8,000		0	0	8,000	27,700	776	200	28,476
12b	8,000		5,000	41,769	54,769		27,700		27,700
12c	8,000		0	0	8,000		776	200	776
12d	8,000		5,000	41,769	54,769		4,680		4,680
12e	8,000		5,000	41,769	54,769		4,680		4,680
12f	8,000		0	0	8,000		776	200	776
12g	8,000		5,000	41,769	54,769		4,680		4,680
12h	8,000		5,000	41,769	54,769		27,700		27,700
12i	8,000		5,000	41,769	54,769		27,700		27,700

Appendix A-7b. Testing and Monitoring Costs per Model for Existing Sources - Total Annualized Costs

Model No	Testing TAC (\$)					Monitoring TAC (\$)			
	PM	Metals	HCl	Hg	Total	PM	HCl	Hg	Total
13a					0				0
13b					0				0
13c					0				0
13d					0				0
13e					0				0
13f					0				0
13g					0				0
13h					0				0
14a					0				0
14b					0				0
14c					0				0
14d					0				0
14e					0				0
14f					0				0
15a					0				0
15b					0				0
15c					0				0
15d					0				0
15e					0				0
15f					0				0
16a					0				0
16b					0				0
16c					0				0
16d					0				0
17a					0				0
17b					0				0
17c					0				0
17d					0				0
18a	8,000		0	0	8,000	9,924	776	200	10,700
18b	8,000		0	0	8,000	9,924	776	200	10,700
18c	8,000		0	0	8,000		776	200	776
18d	8,000		5,000	8,000	21,000		27,700		27,700
18e	8,000		0	0	8,000		776	200	776
18f	8,000		5,000	8,000	21,000		27,700		27,700
18g	8,000		5,000	8,000	21,000		27,700		27,700
19b	8,000		0	0	8,000	9,924	776	200	10,700
19c	8,000		5,000	8,000	21,000		27,700		27,700
19d	8,000		0	0	8,000		776	200	776
19e	8,000		5,000	8,000	21,000		27,700		27,700
19f	8,000		5,000	8,000	21,000		27,700		27,700
20a	8,000		0	0	8,000	9,924	776	200	10,700
20b	8,000		0	0	8,000		776	200	776
20c	8,000		5,000	41,769	54,769		27,700		27,700
20d	8,000		0	0	8,000		776	200	776
20e	8,000		5,000	41,769	54,769		27,700		27,700
21a					0				0
21b					0				0
21d					0				0
21e					0				0
22a					0				0
22b					0				0
22c					0				0
22d					0				0
22g					0				0
23a					0				0
23b					0				0
23d					0				0
23f					0				0
24a					0				0
24d					0				0
25a					0				0
25b					0				0
26a	8,000		5,000	8,000	21,000			27,700	0
26b	8,000		5,000	8,000	21,000			27,700	0
26c	8,000		5,000	8,000	21,000			27,700	0
26d	8,000		0	0	8,000		776	200	776
26e	8,000		5,000	8,000	21,000		4,680		4,680
26f	8,000		5,000	8,000	21,000		27,700		27,700
27a	8,000		5,000	8,000	21,000	27,700			27,700
27b	8,000		5,000	8,000	21,000			27,700	0
27c	8,000		5,000	8,000	21,000		27,700		27,700
27d	8,000				8,000		776	200	776
27e	8,000		5,000	8,000	21,000	27,700			27,700
27f	8,000		5,000	8,000	21,000		27,700		27,700
28a	8,000		5,000	41,769	54,769	27,700			27,700
28b	8,000		5,000	41,769	54,769			27,700	0
28c	8,000		5,000	41,769	54,769		27,700		27,700

Appendix A-7b. Testing and Monitoring Costs per Model for Existing Sources - Total Annualized Costs

Model No	Testing TAC (\$)					Monitoring TAC (\$)			
	PM	Metals	HCl	Hg	Total	PM	HCl	Hg	Total
29a					0				0
29b					0				0
29c					0				0
30a	8,000		0	0	8,000	9,924	776	200	10,700
30b	8,000		0	0	8,000	9,924	776	200	10,700
30c	8,000		0	0	8,000		776	200	776
30d	8,000		0	0	8,000		776	200	776
30e	8,000		5,000	8,000	21,000		27,700		27,700
31a	8,000		0	0	8,000	27,700	776	200	28,476
31b	8,000		0	0	8,000	27,700	776	200	28,476
31c	8,000		5,000	8,000	21,000		27,700		27,700
31d	8,000		0	0	8,000		776	200	776
31e	8,000		5,000	8,000	21,000		27,700		27,700
32a	8,000		0	0	8,000	27,700	776	200	28,476
32b	8,000		0	0	8,000	27,700	776	200	28,476
32c	8,000		0	0	8,000		776	200	776
32d	8,000		5,000	41,769	54,769		27,700		27,700
33a					0				0
33b					0				0
34a	8,000		0	0	8,000	9,924	776	200	10,700
34b	8,000		0	0	8,000	9,924	776	200	10,700
34c	8,000		0	0	8,000		776	200	776
34d	8,000		5,000	8,000	21,000		27,700		27,700
35a	8,000		0	0	8,000		776	200	776
35b	8,000		5,000	41,769	54,769		27,700		27,700
36a					0				0
36b					0				0
36c					0				0
36e					0				0
37a	8,000		0	0	8,000	9,924	776	200	10,700
37b	8,000		0	0	8,000	9,924	776	200	10,700
37c	8,000		5,000	8,000	21,000		27,700		27,700
37d	8,000		0	0	8,000		776	200	776
37e	8,000		0	0	8,000		776	200	776
37f	8,000		5,000	8,000	21,000		27,700		27,700
38a	8,000		0	0	8,000	27,700	776	200	28,476
38b	8,000		5,000	8,000	21,000		27,700		27,700
38c	8,000		0	0	8,000		776	200	776
38d	8,000		0	0	8,000		776	200	776
38e	8,000		5,000	8,000	21,000		4,680		4,680
38f	8,000		5,000	8,000	21,000		27,700		27,700
38g	8,000		5,000	8,000	21,000		27,700		27,700
39a	8,000		0	0	8,000	27,700	776	200	28,476
39b	8,000		0	0	8,000	27,700	776	200	28,476
39c	8,000		0	0	8,000		776	200	776
39e	8,000		5,000	41,769	54,769		27,700		27,700
39f	8,000		0	0	8,000		776	200	776
39g	8,000		5,000	41,769	54,769		27,700		27,700
40a					0				0
40b					0				0
40d					0				0
41a					0				0
41b					0				0
41c					0				0
41d					0				0
41g					0				0
42a					0				0
42b					0				0
42c					0				0
42d					0				0
42e					0				0
42f					0				0
43a					0				0
43b					0				0
43d					0				0
44a		0	0		0	1,142	776		1,918
44b		0	5,000		5,000	1,142	27,700		28,842
45a		0	0		0	1,142	776		1,918
45b		0	0		0	1,142	776		1,918
45c		0	5,000		5,000	1,142	27,700		28,842
46a		0	0		0	1,142	776		1,918
46b		0	0		0	1,142	776		1,918
46c		0	5,000		5,000	1,142	27,700		28,842

Appendix A-7b. Testing and Monitoring Costs per Model for Existing Sources - Total Annualized Costs

Model No	Testing TAC (\$)					Monitoring TAC (\$)			
	PM	Metals	HCl	Hg	Total	PM	HCl	Hg	Total
47a	8,000				8,000	9,924			9,924
48a	8,000				8,000	9,924			9,924
48b	8,000				8,000	9,924			9,924
48c	8,000				8,000				0
48d	8,000				8,000				0
49b	8,000				8,000	9,924			9,924
49c	8,000				8,000				0
50c	8,000				8,000				0
50f	8,000				8,000				0
52a	8,000				8,000	9,924			9,924
52b	8,000				8,000	9,924			9,924
52f	8,000				8,000	27,700			27,700
53b	8,000				8,000	9,924			9,924
53d	8,000				8,000				0
54c	8,000				8,000				0
55b	8,000				8,000	9,924			9,924
56b	8,000				8,000	9,924			9,924
57d	8,000				8,000				0
58a					0				0
58d					0				0
58h					0				0
59a					0				0
59b					0				0
59d					0				0
59e					0				0
59f					0				0
60a					0				0
60b					0				0
60e					0				0
61a					0				0
62a	8,000				8,000	9,924			9,924
62b	8,000				8,000	9,924			9,924
63a	8,000				8,000	9,924			9,924
63b	8,000				8,000	9,924			9,924
64d	8,000				8,000				0
64e	8,000				8,000	27,700			27,700
65e	8,000				8,000	27,700			27,700
66a					0				0
67a					0				0
67d					0				0
68a					0				0
69a					0				0
69d					0				0
70b	8,000				8,000	9,924			9,924
72b	8,000				8,000				0
73a	8,000				8,000	9,924			9,924
73b	8,000				8,000	9,924			9,924
74a	8,000				8,000	9,924			9,924
74b	8,000				8,000	9,924			9,924
74e	8,000				8,000	27,700			27,700
75e	8,000				8,000	27,700			27,700
76b	8,000				8,000	9,924			9,924
77b	8,000				8,000	9,924			9,924
78a	8,000				8,000	9,924			9,924
79b	8,000				8,000	9,924			9,924
79d	8,000				8,000				0
80a					0				0
81a					0				0
81g					0				0
82a					0				0
83a					0				0

Appendix A-8a. Testing and Monitoring Costs per Model for New Sources - Total Capital Investment

Model No	Testing TCI (\$)					Monitoring TCI (\$)				
	PM	HCI	Metals	Hg	Total	PM	HCI	Hg	GCP	Total
1	8,000	5,000		8,000	21,000		40,183			40,183
2	8,000	5,000		8,000	21,000		40,183		37,800	77,983
3	8,000	5,000		8,000	21,000		40,183		37,800	77,983
4	8,000	5,000		41,769	54,769		40,183		37,800	77,983
5	8,000	5,000		8,000	21,000		40,183			40,183
6	8,000	5,000		8,000	21,000		40,183		37,800	77,983
7	8,000	5,000		8,000	21,000		40,183		37,800	77,983
8	8,000	5,000		41,769	54,769		40,183		37,800	77,983
9	8,000	5,000		8,000	21,000	29,200	720	200		30,120
10	8,000	5,000		8,000	21,000		40,183		37,800	77,983
11	8,000	5,000		8,000	21,000		40,183		37,800	77,983
12	8,000	5,000		41,769	54,769		40,183		37,800	77,983
13										
14									37,800	37,800
15									37,800	37,800
16									37,800	37,800
17	8,000	5,000		8,000	21,000	29,200	720	200		30,120
18	8,000	5,000		8,000	21,000		720	200	37,800	38,720
19	8,000	5,000		8,000	21,000		720	200	37,800	38,720
20	8,000	5,000		41,769	54,769		720	200	37,800	38,720
21										
22									37,800	37,800
23									37,800	37,800
24									37,800	37,800
25	8,000	5,000		8,000	21,000	29,200	720	200		30,120
26	8,000	5,000		8,000	21,000		40,183		37,800	77,983
27	8,000	5,000		8,000	21,000		40,183		37,800	77,983
28	8,000	5,000		41,769	54,769		40,183		37,800	77,983
29	8,000	5,000		8,000	21,000	29,200	720	200		30,120
30	8,000	5,000		8,000	21,000		720	200	37,800	38,720
31	8,000	5,000		8,000	21,000		720	200	37,800	38,720
32	8,000	5,000		41,769	54,769		720	200	37,800	38,720
33	8,000	5,000		8,000	21,000	29,200	720	200		30,120
34	8,000	5,000		8,000	21,000		720	200	37,800	38,720
35	8,000	5,000		41,769	54,769		720	200	37,800	38,720
36	8,000	5,000		8,000	21,000	29,200	720	200		30,120
37	8,000	5,000		8,000	21,000		720	200	37,800	38,720
38	8,000	5,000		8,000	21,000		720	200	37,800	38,720
39	8,000	5,000		41,769	54,769		720	200	37,800	38,720
40	8,000	5,000			13,000	29,200	720			29,920
41	8,000	5,000			13,000		40,183		37,800	77,983
42	8,000	5,000			13,000		40,183		37,800	77,983
43	8,000	5,000			13,000		40,183		37,800	77,983
44		5,000	8,000	8,000	21,000	1,081	720	200	37,800	39,801
45		5,000	8,000	8,000	21,000	1,081	720	200	37,800	39,801
46		5,000	8,000	41,769	54,769	1,081	720	200	37,800	39,801
47	8,000	5,000		8,000	21,000		40,183		37,800	77,983
48	8,000	5,000		8,000	21,000		40,183		37,800	77,983
49	8,000	5,000		8,000	21,000		40,183		37,800	77,983
50	8,000	5,000		41,769	54,769		40,183		37,800	77,983
52	8,000	5,000		8,000	21,000		40,183		37,800	77,983
53	8,000	5,000		8,000	21,000		40,183		37,800	77,983
54	8,000	5,000		41,769	54,769		40,183		37,800	77,983
55	8,000	5,000		8,000	21,000	29,200	720	200	37,800	67,920
56	8,000	5,000		8,000	21,000		40,183		37,800	77,983
57	8,000	5,000		8,000	21,000		40,183		37,800	77,983

Appendix A-8a. Testing and Monitoring Costs per Model for New Sources - Total Capital Investment

Model No	Testing TCI (\$)					Monitoring TCI (\$)				
	PM	HCI	Metals	Hg	Total	PM	HCI	Hg	GCP	Total
58									37,800	37,800
59									37,800	37,800
60									37,800	37,800
61									37,800	37,800
62	8,000	5,000		8,000	21,000	29,200	720	200	37,800	67,920
63	8,000	5,000		8,000	21,000		720	200	37,800	38,720
64	8,000	5,000		8,000	21,000		720	200	37,800	38,720
65	8,000	5,000		41,769	54,769		720	200	37,800	38,720
66									37,800	37,800
67									37,800	37,800
68									37,800	37,800
69									37,800	37,800
70	8,000	5,000		8,000	21,000		720	200	37,800	38,720
72	8,000	5,000		41,769	54,769		720	200	37,800	38,720
73	8,000	5,000		8,000	21,000	29,200	720	200	37,800	67,920
74	8,000	5,000		8,000	21,000		720	200	37,800	38,720
75	8,000	5,000		8,000	21,000		720	200	37,800	38,720
76	8,000	5,000		8,000	21,000	29,200	720	200	37,800	67,920
77	8,000	5,000		8,000	21,000		720	200	37,800	38,720
78	8,000	5,000		8,000	21,000	29,200	720	200	37,800	67,920
79	8,000	5,000		8,000	21,000		720	200	37,800	38,720
80	8,000	5,000			13,000	29,200	720		37,800	67,720
81	8,000	5,000			13,000		40,183		37,800	77,983
82	8,000	5,000			13,000		40,183		37,800	77,983
83	8,000	5,000			13,000		40,183		37,800	77,983

Appendix A-8b. Testing and Monitoring Costs per Model for New Sources - Total Annualized Costs

Model No	Testing TAC (\$)					Monitoring TAC (\$)				
	PM	HCI	Metals	Hg	Total	PM	HCI	Hg	GCP	Total
1	8,000	5,000		8,000	21,000		27,700			27,700
2	8,000	5,000		8,000	21,000		27,700		7,840	35,540
3	8,000	5,000		8,000	21,000		27,700		7,840	35,540
4	8,000	5,000		41,769	54,769		27,700		7,840	35,540
5	8,000	5,000		8,000	21,000		27,700			27,700
6	8,000	5,000		8,000	21,000		27,700		7,840	35,540
7	8,000	5,000		8,000	21,000		27,700		7,840	35,540
8	8,000	5,000		41,769	54,769		27,700		7,840	35,540
9	8,000	0		0	8,000	9,924	776	200		10,900
10	8,000	5,000		8,000	21,000		27,700		7,840	35,540
11	8,000	5,000		8,000	21,000		27,700		7,840	35,540
12	8,000	5,000		41,769	54,769		27,700		7,840	35,540
13										
14									7,840	7,840
15									7,840	7,840
16									7,840	7,840
17	8,000	0		0	8,000	9,924	776	200		10,900
18	8,000	0		0	8,000		776	200	7,840	8,816
19	8,000	0		0	8,000		776	200	7,840	8,816
20	8,000	0		0	8,000		776	200	7,840	8,816
21										
22									7,840	7,840
23									7,840	7,840
24									7,840	7,840
25	8,000	0		0	8,000	9,924	776	200		10,900
26	8,000	5,000		8,000	21,000		27,700		7,840	35,540
27	8,000	5,000		8,000	21,000		27,700		7,840	35,540
28	8,000	5,000		41,769	54,769		27,700		7,840	35,540
29	8,000	0		0	8,000	9,924	776	200		10,900
30	8,000	0		0	8,000		776	200	7,840	8,816
31	8,000	0		0	8,000		776	200	7,840	8,816
32	8,000	0		0	8,000		776	200	7,840	8,816
33	8,000	0		0	8,000	9,924	776	200		10,900
34	8,000	0		0	8,000		776	200	7,840	8,816
35	8,000	0		0	8,000		776	200	7,840	8,816
36	8,000	0		0	8,000	9,924	776	200		10,900
37	8,000	0		0	8,000		776	200	7,840	8,816
38	8,000	0		0	8,000		776	200	7,840	8,816
39	8,000	0		0	8,000		776	200	7,840	8,816
40	8,000	0			8,000	9,924	776			10,700
41	8,000	5,000			13,000		27,700		7,840	35,540
42	8,000	5,000			13,000		27,700		7,840	35,540
43	8,000	5,000			13,000		27,700		7,840	35,540
44		0		0	0	1,142	776	200	7,840	9,958
45		0		0	0	1,142	776	200	7,840	9,958
46		0		0	0	1,142	776	200	7,840	9,958
47	8,000	5,000		8,000	21,000		27,700		7,840	35,540
48	8,000	5,000		8,000	21,000		27,700		7,840	35,540
49	8,000	5,000		8,000	21,000		27,700		7,840	35,540
50	8,000	5,000		41,769	54,769		27,700		7,840	35,540
52	8,000	5,000		8,000	21,000		27,700		7,840	35,540
53	8,000	5,000		8,000	21,000		27,700		7,840	35,540
54	8,000	5,000		41,769	54,769		27,700		7,840	35,540
55	8,000	0		0	8,000	9,924	776	200	7,840	18,740
56	8,000	5,000		8,000	21,000		27,700		7,840	35,540
57	8,000	5,000		8,000	21,000		27,700		7,840	35,540

Appendix A-8b. Testing and Monitoring Costs per Model for New Sources - Total Annualized Costs

Model No	Testing TAC (\$)					Monitoring TAC (\$)				
	PM	HCI	Metals	Hg	Total	PM	HCI	Hg	GCP	Total
58									7,840	7,840
59									7,840	7,840
60									7,840	7,840
61									7,840	7,840
62	8,000	0		0	8,000	9,924	776	200	7,840	18,740
63	8,000	0		0	8,000		776	200	7,840	8,816
64	8,000	0		0	8,000		776	200	7,840	8,816
65	8,000	0		0	8,000		776	200	7,840	8,816
66									7,840	7,840
67									7,840	7,840
68									7,840	7,840
69									7,840	7,840
70	8,000	0		0	8,000		776	200	7,840	8,816
72	8,000	0		0	8,000		776	200	7,840	8,816
73	8,000	0		0	8,000	9,924	776	200	7,840	18,740
74	8,000	0		0	8,000		776	200	7,840	8,816
75	8,000	0		0	8,000		776	200	7,840	8,816
76	8,000	0		0	8,000	9,924	776	200	7,840	18,740
77	8,000	0		0	8,000		776	200	7,840	8,816
78	8,000	0		0	8,000	9,924	776	200	7,840	18,740
79	8,000	0		0	8,000		776	200	7,840	8,816
80	8,000	0			8,000	9,924	776		7,840	18,540
81	8,000	5,000			13,000		27,700		7,840	35,540
82	8,000	5,000			13,000		27,700		7,840	35,540
83	8,000	5,000			13,000		27,700		7,840	35,540

Appendix A-9. MACT Floor Emission Reductions (Mg/yr) for Existing Sources for All Units in Model

Model No	Material	Combustor Type	Capacity Range (MMBtu/hr)	Avg Capacity (MMBtu/hr)	Baseline Control Level	No of Units	MACT Floor Emission Reductions (Mg/yr) for All Units in Model							
							Hg	Pb	HCl	PM	Total non-mercury metals ¹	Total selected inorganics ²	Total selected organics ³	Total selected HAPs ⁴
1a	Coal	Other	0-10	4	No Control	48	0	0	0	0	0	0	0	0
1b	Coal	Other	0-10	4	Cyclone	32	0	0	0	0	0	0	0	0
1c	Coal	Other	0-10	4	FF	3	0	0	0	0	0	0	0	0
2a	Coal	Other	10-100	54	No Control	154	3.7E-02	5.4E+00	7.6E+02	4.1E+04	4.2E+01	1.1E+03	0	1.1E+03
2b	Coal	Other	10-100	54	Cyclone	436	1.1E-01	1.3E+01	2.2E+03	2.7E+04	9.8E+01	3.3E+03	0	3.2E+03
2c	Coal	Other	10-100	54	ESP	123	6.2E-02	0	8.0E+02	0	0	1.2E+03	0	1.1E+03
2d	Coal	Other	10-100	54	FF	181	2.3E-02	0	1.2E+03	0	0	1.6E+03	0	1.6E+03
2e	Coal	Other	10-100	54	FF/DSI	5	0	0	0	0	0	0	0	0
2f	Coal	Other	10-100	54	FF/SD	5	0	0	0	0	0	0	0	0
2g	Coal	Other	10-100	54	Wet Scrubber	15	5.8E-03	3.4E-01	0	2.1E+03	2.7E+00	0	0	2.9E-01
3a	Coal	Other	100-250	166	No Control	46	3.4E-02	5.0E+00	7.0E+02	3.8E+04	3.9E+01	1.1E+03	0	1.0E+03
3b	Coal	Other	100-250	166	Cyclone	166	1.2E-01	1.5E+01	2.5E+03	3.1E+04	1.2E+02	3.8E+03	0	3.7E+03
3c	Coal	Other	100-250	166	ESP	112	8.3E-02	0	1.7E+03	0	0	2.5E+03	0	2.4E+03
3d	Coal	Other	100-250	166	ESP/Wet Scrubber	2	0	0	0	0	0	0	0	0
3e	Coal	Other	100-250	166	FF	160	3.0E-02	0	2.4E+03	0	0	3.3E+03	0	3.2E+03
3f	Coal	Other	100-250	166	FF/DSI	4	0	0	0	0	0	0	0	0
3g	Coal	Other	100-250	166	FF/Wet Scrubber	4	0	0	0	0	0	0	0	0
3h	Coal	Other	100-250	166	Wet Scrubber	15	7.1E-03	1.1E+00	5.7E+01	6.0E+03	8.5E+00	8.6E+01	0	8.4E+01
4a	Coal	Other	>250	565	No Control	24	6.1E-02	8.9E+00	1.2E+03	6.8E+04	6.9E+01	1.9E+03	0	1.8E+03
4b	Coal	Other	>250	565	Cyclone	14	3.5E-02	4.3E+00	7.3E+02	9.0E+03	3.3E+01	1.1E+03	0	1.1E+03
4c	Coal	Other	>250	565	ESP	40	1.0E-01	0	2.1E+03	0	0	3.0E+03	0	2.9E+03
4d	Coal	Other	>250	565	ESP/DSI	2	5.0E-03	0	0	0	0	0	0	0
4e	Coal	Other	>250	565	ESP/Wet Scrubber	4	0	0	0	0	0	0	0	0
4f	Coal	Other	>250	565	FF	56	3.5E-02	0	2.9E+03	0	0	3.9E+03	0	3.8E+03
4g	Coal	Other	>250	565	FF/DSI	40	0	0	0	0	0	0	0	0
4h	Coal	Other	>250	565	FF/FSI	10	0	0	0	0	0	0	0	0
4i	Coal	Other	>250	565	FF/SD	6	0	0	0	0	0	0	0	0
4j	Coal	Other	>250	565	Wet Scrubber	8	1.3E-02	2.0E+00	1.0E+02	1.1E+04	1.5E+01	1.6E+02	0	1.5E+02
5a	Coal	Wall-fired/PC	0-10	2	No Control	10	0	0	0	0	0	0	0	0
5b	Coal	Wall-fired/PC	0-10	2	Cyclone	2	0	0	0	0	0	0	0	0
6a	Coal	Wall-fired/PC	10-100	57	No Control	14	3.6E-03	5.2E-01	7.3E+01	4.0E+03	4.0E+00	1.1E+02	0	1.1E+02
6b	Coal	Wall-fired/PC	10-100	57	Cyclone	5	1.3E-03	1.5E-01	2.6E+01	3.3E+02	1.2E+00	3.9E+01	0	3.8E+01
6c	Coal	Wall-fired/PC	10-100	57	ESP	37	2.0E-02	0	2.6E+02	0	0	3.7E+02	0	3.6E+02
6d	Coal	Wall-fired/PC	10-100	57	FF	28	3.7E-03	0	1.9E+02	0	0	2.6E+02	0	2.6E+02
6e	Coal	Wall-fired/PC	10-100	57	FF/DSI	2	0	0	0	0	0	0	0	0
6f	Coal	Wall-fired/PC	10-100	57	Wet Scrubber	12	4.9E-03	2.9E-01	0	1.7E+03	2.2E+00	0	0	2.5E-01
7a	Coal	Wall-fired/PC	100-250	186	No Control	12	1.0E-02	1.5E+00	2.0E+02	1.1E+04	1.1E+01	3.1E+02	0	3.0E+02
7b	Coal	Wall-fired/PC	100-250	186	Cyclone	5	4.2E-03	5.0E-01	8.5E+01	1.1E+03	3.9E+00	1.3E+02	0	1.2E+02
7c	Coal	Wall-fired/PC	100-250	186	Cyclone/Packed scrubber	5	2.1E-03	2.8E-01	8.5E-01	1.1E+03	2.2E+00	2.2E+00	0	1.5E+00
7d	Coal	Wall-fired/PC	100-250	186	ESP	93	7.7E-02	0	1.6E+03	0	0	2.3E+03	0	2.2E+03
7e	Coal	Wall-fired/PC	100-250	186	FF	79	1.6E-02	0	1.3E+03	0	0	1.8E+03	0	1.8E+03
7f	Coal	Wall-fired/PC	100-250	186	FF/SD	2	0	0	0	0	0	0	0	0
7g	Coal	Wall-fired/PC	100-250	186	FF/Wet Scrubber	2	0	0	0	0	0	0	0	0
7h	Coal	Wall-fired/PC	100-250	186	Wet Scrubber	14	7.4E-03	1.2E+00	6.0E+01	6.3E+03	8.9E+00	9.0E+01	0	8.8E+01
8a	Coal	Wall-fired/PC	>250	600	No Control	17	4.6E-02	6.7E+00	9.4E+02	5.1E+04	5.2E+01	1.4E+03	0	1.4E+03
8c	Coal	Wall-fired/PC	>250	600	ESP	196	5.3E-01	0	1.1E+04	0	0	1.6E+04	0	1.5E+04
8d	Coal	Wall-fired/PC	>250	600	ESP/SD	5	1.3E-02	0	0	0	0	0	0	0
8e	Coal	Wall-fired/PC	>250	600	ESP/Packed scrubber	7	0	0	0	0	0	0	0	0
8f	Coal	Wall-fired/PC	>250	600	ESP/Wet Scrubber	12	0	0	0	0	0	0	0	0
8g	Coal	Wall-fired/PC	>250	600	FF	36	2.4E-02	0	2.0E+03	0	0	2.7E+03	0	2.6E+03
8h	Coal	Wall-fired/PC	>250	600	FF/DSI	12	0	0	0	0	0	0	0	0
8i	Coal	Wall-fired/PC	>250	600	FF/SD	2	0	0	0	0	0	0	0	0
8j	Coal	Wall-fired/PC	>250	600	FF/Wet Scrubber	2	0	0	0	0	0	0	0	0
8k	Coal	Wall-fired/PC	>250	600	Wet Scrubber	2	3.4E-03	5.3E-01	2.8E+01	2.9E+03	4.1E+00	4.1E+01	0	4.1E+01

Appendix A-9. MACT Floor Emission Reductions (Mg/yr) for Existing Sources for All Units in Model

Model No	Material	Combustor Type	Capacity Range (MMBtu/hr)	Avg Capacity (MMBtu/hr)	Baseline Control Level	No of Units	MACT Floor Emission Reductions (Mg/yr) for All Units in Model							
							Hg	Pb	HCl	PM	Total non-mercury metals ¹	Total selected inorganics ²	Total selected organics ³	Total selected HAPs ⁴
9a	Coal/Wood/NFF Liquid/NFF Solid	All	0-10	6	No Control	2	0	0	0	0	0	0	0	0
9b	Coal/Wood/NFF Liquid/NFF Solid	All	0-10	6	Cyclone	5	0	0	0	0	0	0	0	0
10a	Coal/Wood/NFF Liquid/NFF Solid	All	10-100	35	No Control	8	9.1E-04	9.6E-02	0	1.1E+03	9.2E-01	0	0	1.3E-01
10b	Coal/Wood/NFF Liquid/NFF Solid	All	10-100	35	Cyclone	54	0	5.4E-01	0	1.5E+03	5.1E+00	0	0	7.2E-01
10c	Coal/Wood/NFF Liquid/NFF Solid	All	10-100	35	ESP	5	0	0	0	0	0	0	0	0
11a	Coal/Wood/NFF Liquid/NFF Solid	All	100-250	173	Cyclone	3	7.3E-04	1.6E-01	1.3E+01	4.6E+02	1.5E+00	3.6E+01	0	3.1E+01
11b	Coal/Wood/NFF Liquid/NFF Solid	All	100-250	173	ESP	11	0	0	0	0	0	0	0	0
11c	Coal/Wood/NFF Liquid/NFF Solid	All	100-250	173	Wet Scrubber	2	3.1E-04	9.2E-02	2.1E+00	6.8E+02	8.8E-01	5.9E+00	0	5.2E+00
11d	Coal/Wood/NFF Liquid/NFF Solid	All	100-250	173	FF	2	0	0	0	0	0	0	0	0
12a	Coal/Wood/NFF Liquid/NFF Solid	All	>250	565	Cyclone	1	8.7E-04	1.9E-01	1.5E+01	5.4E+02	1.8E+00	4.2E+01	0	3.6E+01
12b	Coal/Wood/NFF Liquid/NFF Solid	All	>250	565	Cyclone/Packed scrubber	4	1.7E-03	4.2E-01	6.1E-01	2.2E+03	4.1E+00	7.6E+00	0	2.0E+00
12c	Coal/Wood/NFF Liquid/NFF Solid	All	>250	565	ESP	47	0	0	0	0	0	0	0	0
12d	Coal/Wood/NFF Liquid/NFF Solid	All	>250	565	ESP/FSI	1	0	0	0	0	0	0	0	0
12e	Coal/Wood/NFF Liquid/NFF Solid	All	>250	565	ESP/SD	4	0	0	0	0	0	0	0	0
12f	Coal/Wood/NFF Liquid/NFF Solid	All	>250	565	FF	5	0	0	0	0	0	0	0	0
12g	Coal/Wood/NFF Liquid/NFF Solid	All	>250	565	FF/FSI	7	0	0	0	0	0	0	0	0
12h	Coal/Wood/NFF Liquid/NFF Solid	All	>250	565	FF/Wet Scrubber	2	0	0	0	0	0	0	0	0
12i	Coal/Wood/NFF Liquid/NFF Solid	All	>250	565	Wet Scrubber	6	3.4E-03	9.9E-01	2.3E+01	7.2E+03	9.4E+00	6.3E+01	0	5.5E+01
13a	Gas	Other	0-10	3	No Control	26,737	0	0	0	0	0	0	0	0
13b	Gas	Other	0-10	3	Cyclone	119	0	0	0	0	0	0	0	0
13c	Gas	Other	0-10	3	ESP	119	0	0	0	0	0	0	0	0
13d	Gas	Other	0-10	3	FF	246	0	0	0	0	0	0	0	0
13e	Gas	Other	0-10	3	FF/DSI	5	0	0	0	0	0	0	0	0
13f	Gas	Other	0-10	3	FF/Wet Scrubber	9	0	0	0	0	0	0	0	0
13g	Gas	Other	0-10	3	Packed scrubber	9	0	0	0	0	0	0	0	0
13h	Gas	Other	0-10	3	Wet Scrubber	179	0	0	0	0	0	0	0	0
14a	Gas	Other	10-100	33	No Control	13,726	0	0	0	0	0	0	0	0
14b	Gas	Other	10-100	33	Cyclone	125	0	0	0	0	0	0	0	0
14c	Gas	Other	10-100	33	ESP	23	0	0	0	0	0	0	0	0
14d	Gas	Other	10-100	33	FF	98	0	0	0	0	0	0	0	0
14e	Gas	Other	10-100	33	FF/Wet Scrubber	13	0	0	0	0	0	0	0	0
14f	Gas	Other	10-100	33	Wet Scrubber	228	0	0	0	0	0	0	0	0
15a	Gas	Other	100-250	164	No Control	1,516	0	0	0	0	0	0	0	0
15b	Gas	Other	100-250	164	Cyclone	21	0	0	0	0	0	0	0	0
15c	Gas	Other	100-250	164	ESP	17	0	0	0	0	0	0	0	0
15d	Gas	Other	100-250	164	ESP/Wet Scrubber	5	0	0	0	0	0	0	0	0
15e	Gas	Other	100-250	164	FF	9	0	0	0	0	0	0	0	0
15f	Gas	Other	100-250	164	Wet Scrubber	50	0	0	0	0	0	0	0	0
16a	Gas	Other	>250	520	No Control	649	0	0	0	0	0	0	0	0
16b	Gas	Other	>250	520	Cyclone	19	0	0	0	0	0	0	0	0
16c	Gas	Other	>250	520	ESP	13	0	0	0	0	0	0	0	0
16d	Gas	Other	>250	520	Wet Scrubber	19	0	0	0	0	0	0	0	0
17a	Gas/Wood/Other Biomass/Liquid FF	All	0-10	6	No Control	10	0	0	0	0	0	0	0	0
17b	Gas/Wood/Other Biomass/Liquid FF	All	0-10	6	Cyclone	11	0	0	0	0	0	0	0	0
17c	Gas/Wood/Other Biomass/Liquid FF	All	0-10	6	FF	2	0	0	0	0	0	0	0	0
17d	Gas/Wood/Other Biomass/Liquid FF	All	0-10	6	Wet Scrubber	2	0	0	0	0	0	0	0	0
18a	Gas/Wood/Other Biomass/Liquid FF	All	10-100	45	No Control	12	8.9E-04	4.9E-02	0	8.2E+02	2.3E+00	0	0	1.7E-02
18b	Gas/Wood/Other Biomass/Liquid FF	All	10-100	45	Cyclone	66	0	1.6E-01	0	6.8E+02	7.5E+00	0	0	5.6E-02
18c	Gas/Wood/Other Biomass/Liquid FF	All	10-100	45	ESP	13	0	0	0	0	0	0	0	0
18d	Gas/Wood/Other Biomass/Liquid FF	All	10-100	45	ESP/Wet Scrubber	1	0	0	0	0	0	0	0	0
18e	Gas/Wood/Other Biomass/Liquid FF	All	10-100	45	FF	1	0	0	0	0	0	0	0	0
18f	Gas/Wood/Other Biomass/Liquid FF	All	10-100	45	FF/Wet Scrubber	1	0	0	0	0	0	0	0	0
18g	Gas/Wood/Other Biomass/Liquid FF	All	10-100	45	Wet Scrubber	3	0	7.5E-03	0	8.2E+01	3.5E-01	0	0	2.6E-03

Appendix A-9. MACT Floor Emission Reductions (Mg/yr) for Existing Sources for All Units in Model

Model No	Material	Combustor Type	Capacity Range (MMBtu/hr)	Avg Capacity (MMBtu/hr)	Baseline Control Level	No of Units	MACT Floor Emission Reductions (Mg/yr) for All Units in Model							
							Hg	Pb	HCl	PM	Total non-mercury metals ¹	Total selected inorganics ²	Total selected organics ³	Total selected HAPs ⁴
19b	Gas/Wood/Other Biomass/Liquid FF	All	100-250	178	Cyclone	5	0	5.4E-02	0	2.3E+02	2.6E+00	0	0	1.9E-02
19c	Gas/Wood/Other Biomass/Liquid FF	All	100-250	178	Cyclone/Packed scrubber	1	0	6.0E-03	0	4.7E+01	2.9E-01	0	0	2.1E-03
19d	Gas/Wood/Other Biomass/Liquid FF	All	100-250	178	ESP	12	0	0	0	0	0	0	0	0
19e	Gas/Wood/Other Biomass/Liquid FF	All	100-250	178	ESP/Wet Scrubber	1	0	0	0	0	0	0	0	0
19f	Gas/Wood/Other Biomass/Liquid FF	All	100-250	178	Wet Scrubber	15	1.3E-03	1.7E-01	6.4E+00	1.9E+03	8.0E+00	7.5E+00	0	6.8E+00
20a	Gas/Wood/Other Biomass/Liquid FF	All	>250	394	Cyclone	5	0	1.2E-01	0	5.4E+02	5.9E+00	0	0	4.4E-02
20b	Gas/Wood/Other Biomass/Liquid FF	All	>250	394	ESP	11	0	0	0	0	0	0	0	0
20c	Gas/Wood/Other Biomass/Liquid FF	All	>250	394	ESP/Wet Scrubber	2	0	0	0	0	0	0	0	0
20d	Gas/Wood/Other Biomass/Liquid FF	All	>250	394	FF	3	0	0	0	0	0	0	0	0
20e	Gas/Wood/Other Biomass/Liquid FF	All	>250	394	Wet Scrubber	24	4.8E-03	6.2E-01	2.4E+01	6.9E+03	3.0E+01	2.7E+01	0	2.5E+01
21a	Distillate Liquid FF	All	0-10	3	No Control	2,066	0	0	0	0	0	0	0	0
21b	Distillate Liquid FF	All	0-10	3	Cyclone	18	0	0	0	0	0	0	0	0
21d	Distillate Liquid FF	All	0-10	3	FF	52	0	0	0	0	0	0	0	0
21e	Distillate Liquid FF	All	0-10	3	Wet Scrubber	11	0	0	0	0	0	0	0	0
22a	Distillate Liquid FF	All	10-100	29	No Control	888	0	0	0	0	0	0	0	0
22b	Distillate Liquid FF	All	10-100	29	Cyclone	6	0	0	0	0	0	0	0	0
22c	Distillate Liquid FF	All	10-100	29	ESP	6	0	0	0	0	0	0	0	0
22d	Distillate Liquid FF	All	10-100	29	FF	9	0	0	0	0	0	0	0	0
22g	Distillate Liquid FF	All	10-100	29	Wet Scrubber	6	0	0	0	0	0	0	0	0
23a	Distillate Liquid FF	All	100-250	157	No Control	93	0	0	0	0	0	0	0	0
23b	Distillate Liquid FF	All	100-250	157	Cyclone	3	0	0	0	0	0	0	0	0
23d	Distillate Liquid FF	All	100-250	157	FF	3	0	0	0	0	0	0	0	0
23f	Distillate Liquid FF	All	100-250	157	Wet Scrubber	6	0	0	0	0	0	0	0	0
24a	Distillate Liquid FF	All	>250	355	No Control	104	0	0	0	0	0	0	0	0
24d	Distillate Liquid FF	All	>250	355	ESP	3	0	0	0	0	0	0	0	0
25a	NFF Liquid/NFF Solid/Gas	All	0-10	6	No Control	6	0	0	0	0	0	0	0	0
25b	NFF Liquid/NFF Solid/Gas	All	0-10	6	Cyclone	4	0	0	0	0	0	0	0	0
26a	NFF Liquid/NFF Solid/Gas	All	10-100	58	No Control	32	8.7E-03	6.7E-01	0	1.2E+04	2.9E+00	0	0	1.0E+00
26b	NFF Liquid/NFF Solid/Gas	All	10-100	58	Cyclone	10	2.7E-03	1.7E-01	0	8.8E+02	7.5E-01	0	0	2.7E-01
26c	NFF Liquid/NFF Solid/Gas	All	10-100	58	ESP	3	1.7E-03	0	0	0	0	0	0	0
26d	NFF Liquid/NFF Solid/Gas	All	10-100	58	FF	7	0	0	0	0	0	0	0	0
26e	NFF Liquid/NFF Solid/Gas	All	10-100	58	FF/SD	3	0	0	0	0	0	0	0	0
26f	NFF Liquid/NFF Solid/Gas	All	10-100	58	Wet Scrubber	1	4.3E-04	1.4E-02	0	1.9E+02	5.8E-02	0	0	2.1E-02
27a	NFF Liquid/NFF Solid/Gas	All	100-250	161	No Control	25	1.7E-02	1.4E+00	2.2E+02	2.5E+04	5.8E+00	2.2E+02	0	2.2E+02
27b	NFF Liquid/NFF Solid/Gas	All	100-250	161	ESP	7	1.0E-02	0	0	0	0	0	0	0
27c	NFF Liquid/NFF Solid/Gas	All	100-250	161	ESP/Wet Scrubber	1	0	0	0	0	0	0	0	0
27d	NFF Liquid/NFF Solid/Gas	All	100-250	161	FF	1	0	0	0	0	0	0	0	0
27e	NFF Liquid/NFF Solid/Gas	All	100-250	161	Cyclone	1	7.0E-04	4.5E-02	8.7E+00	2.3E+02	1.9E-01	8.7E+00	0	8.8E+00
27f	NFF Liquid/NFF Solid/Gas	All	100-250	161	Wet Scrubber	3	1.3E-03	1.1E-01	6.5E+00	1.4E+03	4.8E-01	6.5E+00	0	6.7E+00
28a	NFF Liquid/NFF Solid/Gas	All	>250	562	No Control	13	3.7E-02	2.9E+00	4.6E+02	5.2E+04	1.2E+01	4.6E+02	0	4.7E+02
28b	NFF Liquid/NFF Solid/Gas	All	>250	562	ESP	5	1.4E-02	0	0	0	0	0	0	0
28c	NFF Liquid/NFF Solid/Gas	All	>250	562	Wet Scrubber	4	7.3E-03	6.0E-01	3.6E+01	7.8E+03	2.6E+00	3.6E+01	0	3.6E+01
29a	Wood	Other	0-10	5	No Control	80	0	0	0	0	0	0	0	0
29b	Wood	Other	0-10	5	Cyclone	80	0	0	0	0	0	0	0	0
29c	Wood	Other	0-10	5	FF	4	0	0	0	0	0	0	0	0
30a	Wood	Other	10-100	30	No Control	76	9.9E-03	1.0E+00	0	8.0E+03	3.0E+01	0	0	1.6E-01
30b	Wood	Other	10-100	30	Cyclone	264	0	2.9E+00	0	5.9E+03	8.6E+01	0	0	4.7E-01
30c	Wood	Other	10-100	30	ESP	23	0	0	0	0	0	0	0	0
30d	Wood	Other	10-100	30	FF	14	0	0	0	0	0	0	0	0
30e	Wood	Other	10-100	30	Wet Scrubber	29	0	2.7E-01	0	1.4E+03	8.1E+00	0	0	4.5E-02
31a	Wood	Other	100-250	179	No Control	2	7.6E-04	2.0E-01	1.3E+01	1.5E+03	6.1E+00	1.4E+01	0	1.4E+01
31b	Wood	Other	100-250	179	Cyclone	9	3.4E-03	7.1E-01	5.9E+01	1.5E+03	2.1E+00	6.2E+01	0	6.1E+01
31c	Wood	Other	100-250	179	Cyclone/Packed scrubber	1	1.9E-04	4.4E-02	6.6E-02	1.6E+02	1.3E+00	9.0E-02	0	7.5E-02
31d	Wood	Other	100-250	179	ESP	21	0	0	0	0	0	0	0	0

Appendix A-9. MACT Floor Emission Reductions (Mg/yr) for Existing Sources for All Units in Model

Model No	Material	Combustor Type	Capacity Range (MMBtu/hr)	Avg Capacity (MMBtu/hr)	Baseline Control Level	No of Units	MACT Floor Emission Reductions (Mg/yr) for All Units in Model							
							Hg	Pb	HCl	PM	Total non-mercury metals ¹	Total selected inorganics ²	Total selected organics ³	Total selected HAPs ⁴
31e	Wood	Other	100-250	179	Wet Scrubber	29	7.0E-03	2.0E+00	4.8E+01	1.0E+04	5.9E+01	5.0E+01	0	4.9E+01
32a	Wood	Other	>250	449	No Control	2	1.9E-03	5.2E-01	3.4E+01	3.8E+03	1.6E+01	3.5E+01	0	3.5E+01
32b	Wood	Other	>250	449	Cyclone	3	2.9E-03	6.1E-01	5.1E+01	1.2E+03	1.8E+01	5.3E+01	0	5.2E+01
32c	Wood	Other	>250	449	ESP	14	0	0	0	0	0	0	0	0
32d	Wood	Other	>250	449	Wet Scrubber	5	3.1E-03	8.8E-01	2.1E+01	4.6E+03	2.6E+01	2.2E+01	0	2.2E+01
33a	Wood	Wall-fired/PC	0-10	7	No Control	10	0	0	0	0	0	0	0	0
33b	Wood	Wall-fired/PC	0-10	7	Cyclone	5	0	0	0	0	0	0	0	0
34a	Wood	Wall-fired/PC	10-100	26	No Control	2	2.5E-04	2.6E-02	0	2.1E+02	7.6E-01	0	0	4.2E-03
34b	Wood	Wall-fired/PC	10-100	26	Cyclone	28	0	3.0E-01	0	6.0E+02	8.9E+00	0	0	4.9E-02
34c	Wood	Wall-fired/PC	10-100	26	FF	1	0	0	0	0	0	0	0	0
34d	Wood	Wall-fired/PC	10-100	26	Wet Scrubber	1	0	9.2E-03	0	4.8E+01	2.7E-01	0	0	1.5E-03
35a	Wood	Wall-fired/PC	>250	677	ESP	1	0	0	0	0	0	0	0	0
35b	Wood	Wall-fired/PC	>250	677	ESP/Wet Scrubber	1	0	0	0	0	0	0	0	0
36a	Wood/Other Biomass/NFF Liquid/NFF Solid	All	0-10	7	No Control	3	0	0	0	0	0	0	0	0
36b	Wood/Other Biomass/NFF Liquid/NFF Solid	All	0-10	7	Cyclone	2	0	0	0	0	0	0	0	0
36c	Wood/Other Biomass/NFF Liquid/NFF Solid	All	0-10	7	ESP	1	0	0	0	0	0	0	0	0
36e	Wood/Other Biomass/NFF Liquid/NFF Solid	All	0-10	7	Wet Scrubber	5	0	0	0	0	0	0	0	0
37a	Wood/Other Biomass/NFF Liquid/NFF Solid	All	10-100	44	No Control	3	1.3E-03	6.1E-02	0	3.6E+02	5.6E-01	0	0	4.4E-02
37b	Wood/Other Biomass/NFF Liquid/NFF Solid	All	10-100	44	Cyclone	12	0	1.9E-01	0	2.8E+02	1.7E+00	0	0	1.4E-01
37c	Wood/Other Biomass/NFF Liquid/NFF Solid	All	10-100	44	Cyclone/Packed scrubber	1	0	8.8E-03	0	2.4E+01	8.1E-02	0	0	6.4E-03
37d	Wood/Other Biomass/NFF Liquid/NFF Solid	All	10-100	44	ESP	3	0	0	0	0	0	0	0	0
37e	Wood/Other Biomass/NFF Liquid/NFF Solid	All	10-100	44	FF	7	0	0	0	0	0	0	0	0
37f	Wood/Other Biomass/NFF Liquid/NFF Solid	All	10-100	44	Wet Scrubber	6	1.6E-03	8.5E-02	0	3.6E+02	7.8E-01	0	0	6.2E-02
38a	Wood/Other Biomass/NFF Liquid/NFF Solid	All	100-250	173	Cyclone	1	8.5E-04	8.0E-02	0	1.2E+02	7.3E-01	0	0	5.8E-02
38b	Wood/Other Biomass/NFF Liquid/NFF Solid	All	100-250	173	Cyclone/Packed scrubber	1	4.2E-04	4.4E-02	0	1.2E+02	4.1E-01	0	0	3.2E-02
38c	Wood/Other Biomass/NFF Liquid/NFF Solid	All	100-250	173	ESP	15	0	0	0	0	0	0	0	0
38d	Wood/Other Biomass/NFF Liquid/NFF Solid	All	100-250	173	FF	4	0	0	0	0	0	0	0	0
38e	Wood/Other Biomass/NFF Liquid/NFF Solid	All	100-250	173	FF/FSI	1	0	0	0	0	0	0	0	0
38f	Wood/Other Biomass/NFF Liquid/NFF Solid	All	100-250	173	FF/Wet Scrubber	1	0	0	0	0	0	0	0	0
38g	Wood/Other Biomass/NFF Liquid/NFF Solid	All	100-250	173	Wet Scrubber	15	8.1E-03	1.1E+00	2.2E+01	4.1E+03	9.8E+00	2.3E+01	0	2.3E+01
39a	Wood/Other Biomass/NFF Liquid/NFF Solid	All	>250	513	No Control	1	2.4E-03	3.1E-01	1.7E+01	1.7E+03	2.8E+00	1.8E+01	0	1.7E+01
39b	Wood/Other Biomass/NFF Liquid/NFF Solid	All	>250	513	Cyclone	4	9.7E-03	9.1E-01	6.8E+01	1.4E+03	8.4E+00	7.2E+01	0	7.0E+01
39c	Wood/Other Biomass/NFF Liquid/NFF Solid	All	>250	513	ESP	26	0	0	0	0	0	0	0	0
39e	Wood/Other Biomass/NFF Liquid/NFF Solid	All	>250	513	ESP/Wet Scrubber	1	0	0	0	0	0	0	0	0
39f	Wood/Other Biomass/NFF Liquid/NFF Solid	All	>250	513	FF	1	0	0	0	0	0	0	0	0
39g	Wood/Other Biomass/NFF Liquid/NFF Solid	All	>250	513	Wet Scrubber	33	5.1E-02	6.7E+00	1.4E+02	2.6E+04	6.1E+01	1.5E+02	0	1.5E+02
40a	Residual Liquid FF	All	0-10	3	No Control	540	0	0	0	0	0	0	0	0
40b	Residual Liquid FF	All	0-10	3	Cyclone	3	0	0	0	0	0	0	0	0
40d	Residual Liquid FF	All	0-10	3	FF	9	0	0	0	0	0	0	0	0
41a	Residual Liquid FF	All	10-100	37	No Control	1,556	0	0	0	0	0	0	0	0
41b	Residual Liquid FF	All	10-100	37	Cyclone	44	0	0	0	0	0	0	0	0
41c	Residual Liquid FF	All	10-100	37	ESP	4	0	0	0	0	0	0	0	0
41d	Residual Liquid FF	All	10-100	37	FF	34	0	0	0	0	0	0	0	0
41g	Residual Liquid FF	All	10-100	37	Wet Scrubber	32	0	0	0	0	0	0	0	0
42a	Residual Liquid FF	All	100-250	172	No Control	245	0	0	0	0	0	0	0	0
42b	Residual Liquid FF	All	100-250	172	Cyclone	53	0	0	0	0	0	0	0	0
42c	Residual Liquid FF	All	100-250	172	ESP	14	0	0	0	0	0	0	0	0
42d	Residual Liquid FF	All	100-250	172	FF	2	0	0	0	0	0	0	0	0
42e	Residual Liquid FF	All	100-250	172	Packed scrubber	2	0	0	0	0	0	0	0	0
42f	Residual Liquid FF	All	100-250	172	Wet Scrubber	14	0	0	0	0	0	0	0	0
43a	Residual Liquid FF	All	>250	547	No Control	142	0	0	0	0	0	0	0	0
43b	Residual Liquid FF	All	>250	547	Cyclone	11	0	0	0	0	0	0	0	0
43d	Residual Liquid FF	All	>250	547	ESP	5	0	0	0	0	0	0	0	0

Appendix A-9. MACT Floor Emission Reductions (Mg/yr) for Existing Sources for All Units in Model

Model No	Material	Combustor Type	Capacity Range (MMBtu/hr)	Avg Capacity (MMBtu/hr)	Baseline Control Level	No of Units	MACT Floor Emission Reductions (Mg/yr) for All Units in Model							
							Hg	Pb	HCl	PM	Total non-mercury metals ¹	Total selected inorganics ²	Total selected organics ³	Total selected HAPs ⁴
44a	Bagasse/Other	All	10-100	72	Cyclone	9	0	0	0	0	0	0	0	0
44b	Bagasse/Other	All	10-100	72	Wet Scrubber	27	0	0	0	0	0	0	0	0
45a	Bagasse/Other	All	100-250	158	No Control	2	0	0	0	0	0	0	0	0
45b	Bagasse/Other	All	100-250	158	Cyclone	13	0	0	0	0	0	0	0	0
45c	Bagasse/Other	All	100-250	158	Wet Scrubber	21	0	0	0	0	0	0	0	0
46a	Bagasse/Other	All	>250	419	ESP	2	0	0	0	0	0	0	0	0
46b	Bagasse/Other	All	>250	419	ESP/Activated Carbon Adsorption	8	0	0	0	0	0	0	0	0
46c	Bagasse/Other	All	>250	419	Wet Scrubber	50	0	0	0	0	0	0	0	0
47a	Coal	Other	0-10	4	No Control	36	0	1.5E-02	0	1.1E+02	1.1E-01	0	0	1.3E-02
48a	Coal	Other	10-100	54	No Control	10	1.0E-03	5.5E-02	0	4.6E+02	4.2E-01	0	0	4.7E-02
48b	Coal	Other	10-100	54	Cyclone	54	0	1.9E-01	0	3.9E+02	1.4E+00	0	0	1.6E-01
48c	Coal	Other	10-100	54	ESP	3	0	0	0	0	0	0	0	0
48d	Coal	Other	10-100	54	FF	3	0	0	0	0	0	0	0	0
49b	Coal	Other	100-250	166	Cyclone	26	0	2.7E-01	0	5.8E+02	2.1E+00	0	0	2.4E-01
49c	Coal	Other	100-250	166	ESP	3	0	0	0	0	0	0	0	0
50c	Coal	Other	>250	565	ESP	5	0	0	0	0	0	0	0	0
50f	Coal	Other	>250	565	FF	2	0	0	0	0	0	0	0	0
52a	Coal	Wall-fired/PC	10-100	57	No Control	9	9.6E-04	5.2E-02	0	4.3E+02	4.0E-01	0	0	4.4E-02
52b	Coal	Wall-fired/PC	10-100	57	Cyclone	18	0	6.5E-02	0	1.4E+02	5.1E-01	0	0	5.6E-02
52f	Coal	Wall-fired/PC	10-100	57	Wet Scrubber	5	0	1.8E-02	0	9.9E+01	1.4E-01	0	0	1.6E-02
53b	Coal	Wall-fired/PC	100-250	186	Cyclone	6	0	7.1E-02	0	1.5E+02	5.5E-01	0	0	6.1E-02
53d	Coal	Wall-fired/PC	100-250	186	ESP	3	0	0	0	0	0	0	0	0
54c	Coal	Wall-fired/PC	>250	600	ESP	15	0	0	0	0	0	0	0	0
55b	Coal/Wood/NFF Liquid/NFF Solid	All	0-10	6	Cyclone	1	0	1.3E-04	0	3.6E-01	1.2E-03	0	0	1.7E-04
56b	Coal/Wood/NFF Liquid/NFF Solid	All	10-100	35	Cyclone	2	0	1.5E-03	0	4.2E+00	1.4E-02	0	0	2.0E-03
57d	Coal/Wood/NFF Liquid/NFF Solid	All	100-250	173	FF	1	0	0	0	0	0	0	0	0
58a	Gas	Other	0-10	3	No Control	1,938	0	0	0	0	0	0	0	0
58d	Gas	Other	0-10	3	FF	35	0	0	0	0	0	0	0	0
58h	Gas	Other	0-10	3	Wet Scrubber	16	0	0	0	0	0	0	0	0
59a	Gas	Other	10-100	33	No Control	781	0	0	0	0	0	0	0	0
59b	Gas	Other	10-100	33	Cyclone	16	0	0	0	0	0	0	0	0
59d	Gas	Other	10-100	33	FF	13	0	0	0	0	0	0	0	0
59e	Gas	Other	10-100	33	FF/Wet Scrubber	7	0	0	0	0	0	0	0	0
59f	Gas	Other	10-100	33	Wet Scrubber	2	0	0	0	0	0	0	0	0
60a	Gas	Other	100-250	164	No Control	86	0	0	0	0	0	0	0	0
60b	Gas	Other	100-250	164	Cyclone	2	0	0	0	0	0	0	0	0
60e	Gas	Other	100-250	164	FF	2	0	0	0	0	0	0	0	0
61a	Gas	Other	>250	520	No Control	40	0	0	0	0	0	0	0	0
62a	Gas/Wood/Other Biomass/Liquid FF	All	0-10	6	No Control	1	0	5.8E-05	0	9.0E-01	2.8E-03	0	0	2.1E-05
62b	Gas/Wood/Other Biomass/Liquid FF	All	0-10	6	Cyclone	1	0	0	0	0	0	0	0	0
63a	Gas/Wood/Other Biomass/Liquid FF	All	10-100	45	No Control	2	0	8.7E-04	0	1.3E+01	4.1E-02	0	0	3.1E-04
63b	Gas/Wood/Other Biomass/Liquid FF	All	10-100	45	Cyclone	1	0	0	0	0	0	0	0	0
64d	Gas/Wood/Other Biomass/Liquid FF	All	100-250	178	ESP	1	0	0	0	0	0	0	0	0
64e	Gas/Wood/Other Biomass/Liquid FF	All	100-250	178	ESP/Wet Scrubber	1	0	0	0	0	0	0	0	0
65e	Gas/Wood/Other Biomass/Liquid FF	All	>250	394	Wet Scrubber	1	0	1.3E-03	0	1.4E+01	6.0E-02	0	0	4.5E-04
66a	Distillate Liquid FF	All	0-10	3	No Control	428	0	0	0	0	0	0	0	0
67a	Distillate Liquid FF	All	10-100	29	No Control	215	0	0	0	0	0	0	0	0
67d	Distillate Liquid FF	All	10-100	29	FF	3	0	0	0	0	0	0	0	0
68a	Distillate Liquid FF	All	100-250	157	No Control	43	0	0	0	0	0	0	0	0
69a	Distillate Liquid FF	All	>250	355	No Control	11	0	0	0	0	0	0	0	0
69d	Distillate Liquid FF	All	>250	355	ESP	3	0	0	0	0	0	0	0	0
70b	NFF Liquid/NFF Solid/Gas	All	10-100	58	Cyclone	4	0	7.5E-03	0	3.8E+01	3.2E-02	0	0	1.2E-02
72b	NFF Liquid/NFF Solid/Gas	All	>250	562	ESP	1	0	0	0	0	0	0	0	0
73a	Wood	Other	0-10	5	No Control	6	0	2.0E-03	0	1.4E+01	5.8E-02	0	0	3.2E-04

Appendix A-9. MACT Floor Emission Reductions (Mg/yr) for Existing Sources for All Units in Model

Model No	Material	Combustor Type	Capacity Range (MMBtu/hr)	Avg Capacity (MMBtu/hr)	Baseline Control Level	No of Units	MACT Floor Emission Reductions (Mg/yr) for All Units in Model							
							Hg	Pb	HCl	PM	Total non-mercury metals ¹	Total selected inorganics ²	Total selected organics ³	Total selected HAPs ⁴
73b	Wood	Other	0-10	5	Cyclone	8	0	1.1E-03	0	2.3E+00	3.4E-02	0	0	1.9E-04
74a	Wood	Other	10-100	30	No Control	4	0	7.8E-03	0	5.7E+01	2.3E-01	0	0	1.3E-03
74b	Wood	Other	10-100	30	Cyclone	2	0	1.7E-03	0	3.5E+00	5.1E-02	0	0	2.8E-04
74e	Wood	Other	10-100	30	Wet Scrubber	2	0	2.3E-03	0	1.2E+01	6.8E-02	0	0	3.7E-04
75e	Wood	Other	100-250	179	Wet Scrubber	1	0	6.8E-03	0	3.5E+01	2.0E-01	0	0	1.1E-03
76b	Wood	Wall-fired/PC	0-10	7	Cyclone	3	0	6.0E-04	0	1.2E+00	1.8E-02	0	0	9.9E-05
77b	Wood	Wall-fired/PC	10-100	26	Cyclone	2	0	1.5E-03	0	3.0E+00	4.5E-02	0	0	2.4E-04
78a	Wood/Other Biomass/NFF Liquid/NFF Solid	All	0-10	7	No Control	2	0	9.1E-04	0	4.9E+00	8.4E-03	0	0	6.6E-04
79b	Wood/Other Biomass/NFF Liquid/NFF Solid	All	10-100	44	Cyclone	3	0	2.5E-03	0	3.7E+00	2.3E-02	0	0	1.8E-03
79d	Wood/Other Biomass/NFF Liquid/NFF Solid	All	10-100	44	ESP	1	0	0	0	0	0	0	0	0
80a	Residual Liquid FF	All	0-10	3	No Control	167	0	0	0	0	0	0	0	0
81a	Residual Liquid FF	All	10-100	37	No Control	318	0	0	0	0	0	0	0	0
81g	Residual Liquid FF	All	10-100	37	Wet Scrubber	9	0	0	0	0	0	0	0	0
82a	Residual Liquid FF	All	100-250	172	No Control	63	0	0	0	0	0	0	0	0
83a	Residual Liquid FF	All	>250	547	No Control	7	0	0	0	0	0	0	0.0E+00	0
Total						58,200	1.7	95	38,271	513,273	991	54,624	0	53,184

1 Total non-mercury metals include: arsenic, beryllium, cadmium, chromium, lead, manganese, and nickel

2 Total selected inorganics include: chlorine, hydrochloric acid, hydrofluoric acid, and phosphorus

3 Total selected organics include: 16-PAH, acetaldehyde, acrolein, benzene, dioxin/furans, formaldehyde, methylene chloride, MEK, toluene, and xylenes

4 Total selected HAPs include: acetaldehyde, acrolein, benzene, chlorine, formaldehyde, hydrochloric acid, hydrofluoric acid, MEK, nickel, and xylenes

Appendix A-10. MACT Floor Emission Reductions (Mg/yr) for New Sources for All Units in Model

Model No	Material	Combustor Type	Capacity Range (MMBtu/hr)	Avg Capacity (MMBtu/hr)	Baseline Control Level	No of Units	MACT Floor Emission Reductions (Mg/yr) for All Units in Model							
							Hg	Pb	HCl	PM	Total non-mercury metals ¹	Total selected inorganics ²	Total selected organics ³	Total selected HAPs ⁴
1	Coal	Other	0-10	4	No Control	4	1.5E-04	1.1E-02	1.9E+00	8.1E+01	8.3E-02	2.9E+00	0	2.8E+00
2	Coal	Other	10-100	54	FF/Pack Scrub	44	0	0	0	0	0	0	0	0
3	Coal	Other	100-250	166	FF/Pack Scrub	24	0	0	0	0	0	0	0	0
4	Coal	Other	>250	565	FF/Pack Scrub	10	0	0	0	0	0	0	0	0
5	Coal	Wall-fired/PC	0-10	2	No Control	1	1.9E-05	1.3E-03	2.4E-01	1.0E+01	1.0E-02	3.6E-01	0	3.5E-01
6	Coal	Wall-fired/PC	10-100	57	FF/Pack Scrub	5	0	0	0	0	0	0	0	0
7	Coal	Wall-fired/PC	100-250	186	FF/Pack Scrub	10	0	0	0	0	0	0	0	0
8	Coal	Wall-fired/PC	>250	600	FF/Pack Scrub	14	0	0	0	0	0	0	0	0
9	Coal/Wood/NFF	All	0-10	6	No Control	1	1.3E-05	1.8E-03	0.0E+00	1.9E+01	1.8E-02	7.9E-02	0	6.3E-02
10	Coal/Wood/NFF	All	10-100	35	FF/Pack Scrub	5	0	0	0	0	0	0	0	0
11	Coal/Wood/NFF	All	100-250	173	FF/Pack Scrub	1	0	0	0	0	0	0	0	0
12	Coal/Wood/NFF	All	>250	565	FF/Pack Scrub	5	0	0	0	0	0	0	0	0
13	Gas	All	0-10	3	No Control	2019	0	0	0	0	0	0	0	0
14	Gas	All	10-100	33	No Control	1051	0	0	0	0	0	0	0	0
15	Gas	All	100-250	164	No Control	119	0	0	0	0	0	0	0	0
16	Gas	All	>250	520	No Control	52	0	0	0	0	0	0	0	0
17	Gas/Wood/Other Biomass/Liquid FF	All	0-10	6	No Control	2	1.4E-05	1.0E-03	0.0E+00	1.6E+01	4.8E-02	5.5E-03	0	1.7E-03
18	Gas/Wood/Other Biomass/Liquid FF	All	10-100	45	FF	8	0	0	0	0	0	0	0	0
19	Gas/Wood/Other Biomass/Liquid FF	All	100-250	178	FF	3	0	0	0	0	0	0	0	0
20	Gas/Wood/Other Biomass/Liquid FF	All	>250	394	FF	4	0	0	0	0	0	0	0	0
21	Distillate Liquid FF	All	0-10	3	No Control	164	0	0	0	0	0	0	0	0
22	Distillate Liquid FF	All	10-100	29	No Control	71	0	0	0	0	0	0	0	0
23	Distillate Liquid FF	All	100-250	157	No Control	9	0	0	0	0	0	0	0	0
24	Distillate Liquid FF	All	>250	355	No Control	10	0	0	0	0	0	0	0	0
25	NFF Liquid/NFF Solid/Gas	All	0-10	6	No Control	0	0	0	0	0	0	0	0	0
26	NFF Liquid/NFF Solid/Gas	All	10-100	58	FF	1	3.8E-04	1.1E-04	4.5E+00	2.0E+00	4.6E-04	4.5E+00	0	4.5E+00
27	NFF Liquid/NFF Solid/Gas	All	100-250	161	FF	1	9.7E-04	2.8E-04	1.1E+01	5.0E+00	1.2E-03	1.1E+01	0	1.1E+01
28	NFF Liquid/NFF Solid/Gas	All	>250	562	FF	1	4.0E-03	1.1E-03	4.7E+01	2.1E+01	4.9E-03	4.7E+01	0	4.7E+01
29	Wood	Other	0-10	5	No Control	15	2.4E-04	3.2E-02	0.0E+00	2.4E+02	9.6E-01	3.1E-02	0	2.6E-02
30	Wood	Other	10-100	30	FF	38	0	0	0	0	0	0	0	0
31	Wood	Other	100-250	179	FF	6	0	0	0	0	0	0	0	0
32	Wood	Other	>250	449	FF	2	0	0	0	0	0	0	0	0
33	Wood	Wall-fired/PC	0-10	7	No Control	1	2.2E-05	2.9E-03	0.0E+00	2.2E+01	8.8E-02	2.9E-03	0	2.4E-03
34	Wood	Wall-fired/PC	10-100	26	FF	3	0	0	0	0	0	0	0	0
35	Wood	Wall-fired/PC	>250	677	FF	0	0	0	0	0	0	0	0	0
36	Wood/Other Biomass/NFF	All	0-10	7	No Control	1	5.9E-05	3.8E-03	0.0E+00	2.0E+01	3.5E-02	3.9E-03	0	3.7E-03
37	Wood/Other Biomass/NFF	All	10-100	44	FF	3	0	0	0	0	0	0	0	0
38	Wood/Other Biomass/NFF	All	100-250	173	FF	3	0	0	0	0	0	0	0	0
39	Wood/Other Biomass/NFF	All	>250	513	FF	5	0	0	0	0	0	0	0	0
40	Residual Liquid FF	All	0-10	3	No Control	0	0	0	0	0	0	0	0	0
41	Residual Liquid FF	All	10-100	37	Pack Scrub	0	0	0	0	0	0	0	0	0
42	Residual Liquid FF	All	100-250	172	Pack Scrub	0	0	0	0	0	0	0	0	0
43	Residual Liquid FF	All	>250	547	Pack Scrub	0	0	0	0	0	0	0	0	0

Appendix A-10. MACT Floor Emission Reductions (Mg/yr) for New Sources for All Units in Model

Model No	Material	Combustor Type	Capacity Range (MMBtu/hr)	Avg Capacity (MMBtu/hr)	Baseline Control Level	No of Units	MACT Floor Emission Reductions (Mg/yr) for All Units in Model							
							Hg	Pb	HCl	PM	Total non-mercury metals ¹	Total selected inorganics ²	Total selected organics ³	Total selected HAPs ⁴
44	Bagasse/Other	All	10-100	72	FF	4	0	0	0	0	0	0	0	0
45	Bagasse/Other	All	100-250	158	FF	4	0	0	0	0	0	0	0	0
46	Bagasse/Other	All	>250	419	FF	7	0	0	0	0	0	0	0	0
47	Coal	Other	0-10	4	No Control	2	1.2E-05	8.9E-04	1.6E-01	6.8E+00	6.9E-03	2.4E-01	0	2.4E-01
48	Coal	Other	10-100	54	FF/Pack Scrub	3	0	0	0	0	0	0	0	0
49	Coal	Other	100-250	466	FF/Pack Scrub	1	0	0	0	0	0	0	0	0
50	Coal	Other	>250	565	FF/Pack Scrub	0	0	0	0	0	0	0	0	0
52	Coal	Wall-fired/PC	10-100	57	FF/Pack Scrub	2	0	0	0	0	0	0	0	0
53	Coal	Wall-fired/PC	100-250	186	FF/Pack Scrub	0	0	0	0	0	0	0	0	0
54	Coal	Wall-fired/PC	>250	600	FF/Pack Scrub	1	0	0	0	0	0	0	0	0
55	Coal/Wood/NFF	All	0-10	6	No Control	0	0	0	0	0	0	0	0	0
56	Coal/Wood/NFF	All	10-100	35	FF/Pack Scrub	0	0	0	0	0	0	0	0	0
57	Coal/Wood/NFF	All	100-250	173	FF/Pack Scrub	0	0	0	0	0	0	0	0	0
58	Gas	Other	0-10	3	No Control	151	0	0	0	0	0	0	0	0
59	Gas	Other	10-100	33	No Control	61	0	0	0	0	0	0	0	0
60	Gas	Other	100-250	164	No Control	7	0	0	0	0	0	0	0	0
61	Gas	Other	>250	520	No Control	3	0	0	0	0	0	0	0	0
62	Gas/Wood/Other Biomass/Liquid FF	All	0-10	6	No Control	0	0	0	0	0	0	0	0	0
63	Gas/Wood/Other Biomass/Liquid FF	All	10-100	45	FF	0	0	0	0	0	0	0	0	0
64	Gas/Wood/Other Biomass/Liquid FF	All	100-250	178	FF	0	0	0	0	0	0	0	0	0
65	Gas/Wood/Other Biomass/Liquid FF	All	>250	394	FF	0	0	0	0	0	0	0	0	0
66	Distillate Liquid FF	All	0-10	3	No Control	31	0	0	0	0	0	0	0	0
67	Distillate Liquid FF	All	10-100	29	No Control	16	0	0	0	0	0	0	0	0
68	Distillate Liquid FF	All	100-250	157	No Control	3	0	0	0	0	0	0	0	0
69	Distillate Liquid FF	All	>250	355	No Control	1	0	0	0	0	0	0	0	0
70	NFF Liquid/NFF Solid/Gas	All	10-100	58	FF	0	0	0	0	0	0	0	0	0
72	NFF Liquid/NFF Solid/Gas	All	>250	562	FF	0	0	0	0	0	0	0	0	0
73	Wood	Other	0-10	5	No Control	1	2.8E-06	3.8E-04	0.0E+00	2.8E+00	1.1E-02	3.6E-04	0	3.0E-04
74	Wood	Other	10-100	30	FF	1	0	0	0	0	0	0	0	0
75	Wood	Other	100-250	179	FF	0	0	0	0	0	0	0	0	0
76	Wood	Wall-fired/PC	0-10	7	No Control	0	0	0	0	0	0	0	0	0
77	Wood	Wall-fired/PC	10-100	26	FF	0	0	0	0	0	0	0	0	0
78	Wood/Other Biomass/NFF	All	0-10	7	No Control	0	0	0	0	0	0	0	0	0
79	Wood/Other Biomass/NFF	All	10-100	44	FF	0	0	0	0	0	0	0	0	0
80	Residual Liquid FF	All	0-10	3	No Control	0	0	0	0	0	0	0	0	0
81	Residual Liquid FF	All	10-100	37	Pack Scrub	0	0	0	0	0	0	0	0	0
82	Residual Liquid FF	All	100-250	172	Pack Scrub	0	0	0	0	0	0	0	0	0
83	Residual Liquid FF	All	>250	547	Pack Scrub	0	0	0	0	0	0	0	0	0
Total						4,015	5.8E-03	0.06	65	440	1.3	66	0	66

1 Total non-mercury metals include: arsenic, beryllium, cadmium, chromium, lead, manganese, and nickel

2 Total selected inorganics include: chlorine, hydrochloric acid, hydrofluoric acid, and phosphorus

3 Total selected organics include: 16-PAH, acetaldehyde, acrolein, benzene, dioxin/furans, formaldehyde, methylene chloride, MEK, toluene, and xylenes

4 Total selected HAPs include: acetaldehyde, acrolein, benzene, chlorine, formaldehyde, hydrochloric acid, hydrofluoric acid, MEK, nickel, and xylenes